Products Finishing

CLEANING
PLATING
POLISHING
FINISHING

OCTOBER 1952

Saving Nickel

Lea Copper-Glo

Something New in Bright High Speed Copper Plating

The Ronal Bright Copper Process* using Lea Copper-Glo is the answer to the platers' prayers because it answers the problem of extreme nickel shortages.

Lea Copper-Glo makes it practicable to plate properly prefinished steel and die-castings *directly* with chromium without any intermediate buffing operation. It makes it possible for you to forget your nickel worries.

The user of Lea Copper-Glo enjoys numerous advantages as for example:

OPERATING

- Brilliant ductile deposits
- High current density with 100% efficiency
- Exceptional throwing power
- No wetting agents required
- Direct, interrupted or periodic reverse current

COST SAVINGS

- Reduces tank plating time due to high speed operation. (Hull cell bright current density range 10-60 amp./ft.²)
- Reduces rejects whether followed by bright nickel or otherwise; since it contains no wetting agents
- Reduces brightener costs to a few cents/100 gallons of plating solution per day

The Ronal Bright Copper Process using Lea Copper-Glo can be fitted into your plant operating cycle. Regular cyanide or Rochelle Copper baths can be readily converted to obtain these advantages. Write for further information.

* The Ronal Bright Copper Process, using Lea Copper-Glo®, is a development of Ronal Chemicals, Brooklyn, N. Y.

Burring, Buffing and Polishing . . . Manufacturers and Specialists in the Development of Production Methods, Equipment and Compositions

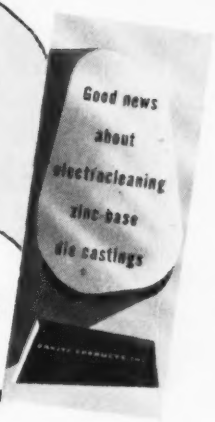
®

THE LEA MANUFACTURING CO.
16 Cherry Avenue, Waterbury 20, Conn.

LEA MFG. COMPANY OF CANADA, LTD.
370 Victoria Street, Toronto 2, Canada

JUST HOW GOOD IS OAKITE'S NEW CONDITIONER FOR ZINC DIE CASTINGS?

IT HAS CUT OUR CLEANING REJECTS BY MORE THAN 90%



Yes, that statement was made by one of the manufacturers who cooperated in the field-testing of Oakite Composition No. 95.

He has found many advantages in this new anodic conditioner. Some of these advantages may be of value to you:

Brighter plating—Anodic conditioning with Oakite Composition No. 95 removes all films that might impair the brightness of the electroplate . . . no interfering residues . . . no under-surface shadows . . .

No anodic blackening—Castings do not lose their buffed-on brightness.

Fewer rejects—Oakite Composition No. 95 eliminates the major causes of peeling and blistering . . . consistent success in test-baking for 60 minutes at 300° F.

FREE For a copy of *"Good news about electroplating zinc-base die castings"*—describing the use of Oakite Composition No. 95—write to Oakite Products Inc., 20 Rector Street, New York 6, N. Y.

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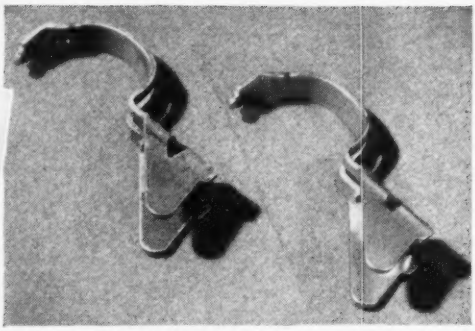
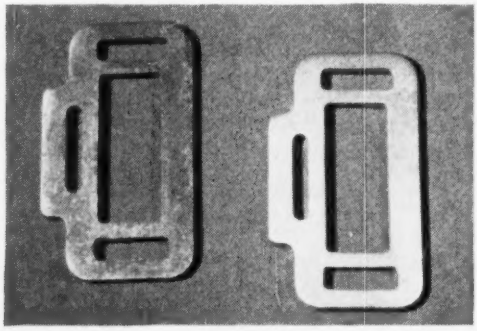


REMOVING HEAT-TREAT SCALE and deburring the hard-to-get-at areas on these steel trigger guards with ALUNDUM Tumbling Abrasive helped speed up the finishing of these defense items.

You can BARREL-FINISH to BLUEPRINT ACCURACY with Norton ALUNDUM* Tumbling Abrasive



DEBURRING these parachute buckles — particularly the inner surfaces—is a good example of how barrel-finishing with ALUNDUM Tumbling Abrasive can solve a tough finishing job.

You get real *precision finishing* with Norton ALUNDUM Tumbling Abrasive. Being all aluminum oxide — not a bonded material — its cutting action is continuous, without glazing. It has the hardness required for fast, positive cutting and the hardness and toughness for long, productive service life.

SEE YOUR NORTON DISTRIBUTOR

For every barrel-finishing application, on ferrous or non-ferrous metals, for any type of barrel, there's a grit size of ALUNDUM Tumbling Abrasive that will give you exactly the results you want. Your Norton Distributor can supply you promptly — and he'll gladly call in a Norton Abrasive Engineer to study your finishing operations and make specific recommendations.

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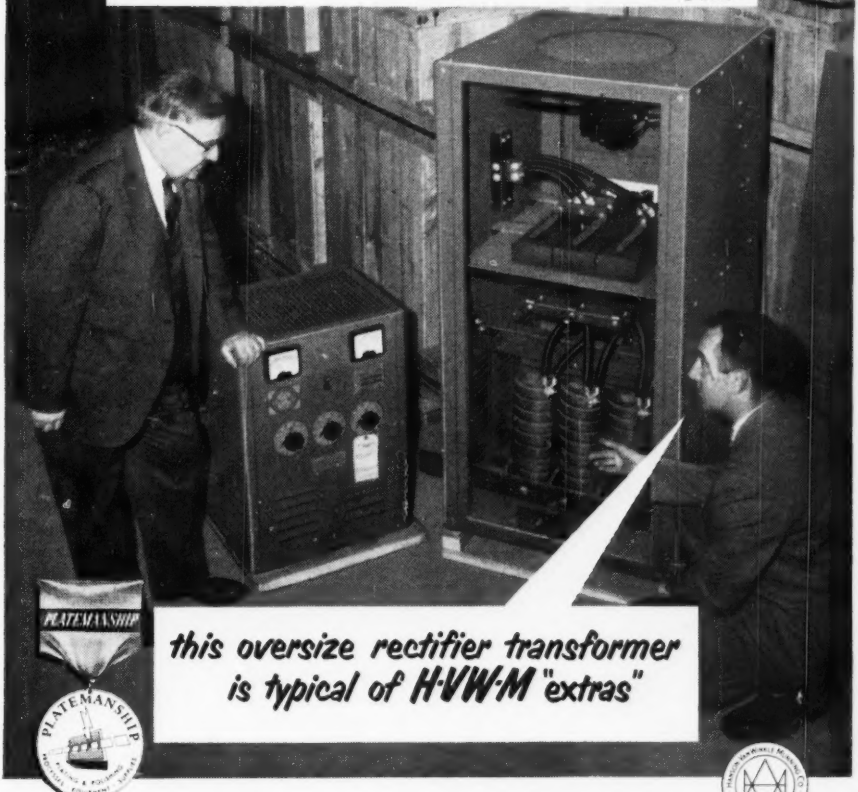
Free Handbook
55 illustrated pages describing every detail of barrel-finishing. Ask your Norton Distributor or write us direct for your copy of Form 501.

NORTON
ABRASIVES
Making better products to make other products better

There's plenty of reserve capacity, more than enough for all your needs. And take a look at the acid and alkali resistant coating on these oversize transformers and selenium stacks—that's real assurance of dependable long life. But that isn't all. Those connections from the transformers to the selenium rectifiers are so flexible that floor vibrations can't possibly loosen the cell connectors. And for ventilating, the chimney effect produced by drawing clean cool air through the cabinet cuts the danger of overheating. These advantages are built into every H-VW-M rectifier—the ones you see in these crates ready to be shipped—and those in service all over the country. They're built to last for *years*.

Durable, dependable rectifiers are only one of the many results of H-VW-M's constant progress in electroplating development for more than eighty years. It's a continuous policy, best summed up in H-VW-M Platemanship . . . your working guarantee of the best that industry has to offer—not only in rectifiers—but in every phase of plating and polishing.

8529



this oversize rectifier transformer is typical of H-VW-M "extras"

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(On leave of absence
U. S. Air Force)

Products finishing

OCTOBER 1952
VOLUME 17 • NUMBER 1

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Associate Editor

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Consulting and Contributing Editors

GENE J. SCHWARBER
Advertising Manager

NORMAN S. ROGERS
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K. M. GETTELMAN
Circulation Manager

ADVERTISING REPRESENTATIVES

RICHARD S. KLINE
GEORGE E. HAY
431 Main St., Cincinnati 2
MAin 0182

G. M. FILLMORE
DUNCAN W. BARTON
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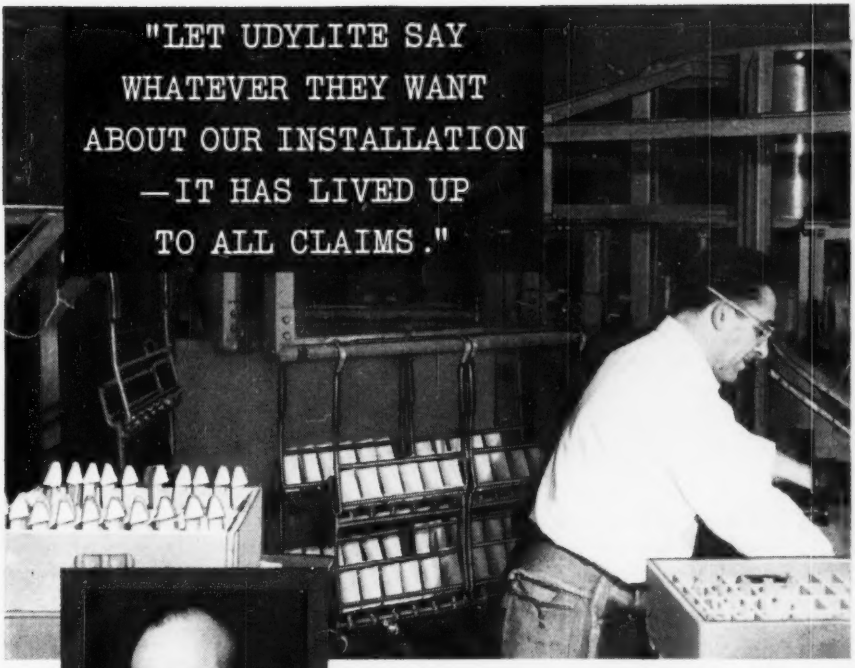

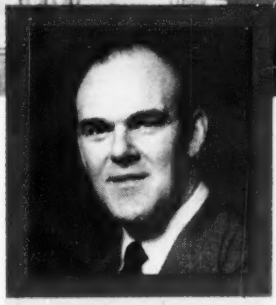

LEW WENGERT

Says Lew Wengert, Plant Superintendent of Utica Drop Forge & Tool Corporation

When we asked Mr. Wengert, superintendent of the Yorkville plant of the Utica Drop Forge & Tool Corporation, about the Udylite Rotary Full Automatic in that plant this was the reply we got. The machine is used for processing jet engine parts.

Mr. Wengert's enthusiasm is typical of Udylite customers. He has found, like many other users, that Udylite lives up to the claims made by our salesman. The Udylite organization owes its progress and growth to the guiding principle of being honest with its customers. So, if you're in the market for equipment and supplies for a "better way in plating", it will pay you to look to Udylite. Call in your Udylite Technical Man today and let him tell you the complete story. Or write to The Udylite Corporation, Detroit 11, Michigan. *There's no obligation.*

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Udylite
CORPORATION
DETROIT 11, MICHIGAN

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8 REASONS-

why FLAT-TOP is here to stay

WE knew our Copper FLAT-TOP was one of the answers to a plater's prayer when we introduced it in 1950. Now, you progressive plating men all over the country have *tried* FLAT-TOP—and found it TRUE. Its acceptance as the standard premium anode is almost universal. The reasons why are sound:

1. FLAT•TOP is Smooth! No gates or flash to hang on basket. No cavities to hide inclusions of copper oxide, silica or dirt.

2. FLAT•TOP has Greater Area! From 20 to 25% more effective area than a ball. More weight of metal per anode means less frequent loading.

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4. FLAT•TOP is Efficient! No more troublesome and costly scrapping of unusable "swords" and hooks. Used completely, no scrap.

5. FLAT•TOP is Predictable! Eliminates rapidly changing anode area as bars corrode, decreasing sludge formation and rough plating.

6. FLAT•TOP is Ready! No waiting, no extra handling, no extra costs of fabricating and attaching hooks. Load your baskets right from the keg.

7. FLAT•TOP is Clean! NEW durable wooden kegs, free from foreign matter found in used metal containers, keep FLAT•TOP clean!

8. FLAT•TOP is Convenient! Safe to stack, easy to roll or truck from storage to plating department. 250 lbs. net.

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- ☐ Send full information on Wagner Anodes
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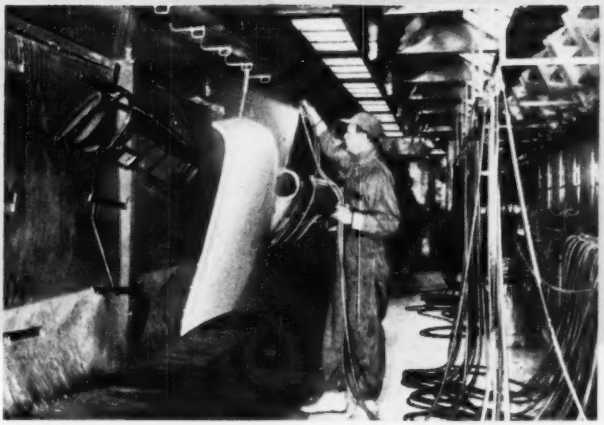

A NEW FACE *for a* NEW JOB!

Did you ever hear of a spray painting booth where the men could work without wearing masks? And if YOU are directly responsible for the efficiency, safety and production of such a booth, did you ever think of the improvement that could be effected in general conditions if the men could work unhampered? Well, the illustration above shows spray painters at work in a PETERS-DALTON CONVEYORIZED booth in a leading West Coast auto plant. THEY ARE WORKING WITHOUT MASKS! The higher suction and greater washing action of PETERS-DALTON HYDRO-WHIRL SYSTEMS guarantee maximum efficiency with maximum safety. If any of your manufacturing problems concern PAINT SPRAY BOOTHS, METAL WASHING EQUIPMENT, DRYING and BAKING OVENS, DUST COLLECTING SYSTEMS, it will pay you to investigate PETERS-DALTON. We believe in safety, production and "good housekeeping"—and incorporate these three important qualities into our equipment.

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METAL WASHING EQUIPMENT

for your plant

No matter what your metal washing problem, whether it be a simple washing job, an intricate surface preparation, a space limitation, or what have you, there is a Despatch Metal Washer to take care of it, or one can be built for the purpose.

Washer Bulletin No. 68 will give you the facts on Despatch engineered metal washing equipment . . . will tell you how to select a washer . . . will show you metal washing systems built to meet specific needs . . . will convince you that you can save time and money with Despatch engineered metal washing equipment. Write for your FREE copy today.

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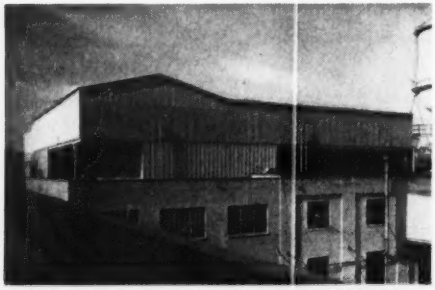

Because of space limitations, Despatch designed, fabricated and installed this complete finishing system on the factory roof for a leading mid-western refrigerator manufacturer.

Complete finishing systems designed and engineered by Despatch are at work in hundreds of leading industrial plants throughout the country. Engineered and coordinated to operate as single units, they consist of metal washers, dry-off ovens, paint spray booths, finish bake ovens, air make-up systems. They are turning out thousands of different products, large and small on fast, efficient production schedules.

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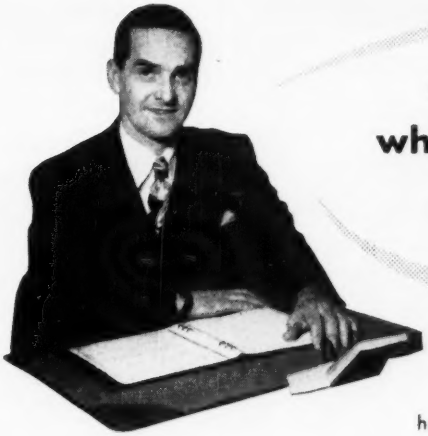

6602 reasons why HARRISON is *Right!*

That's the number of times Harrison has scored during the last 30 years with *particular* compounds to meet *particular* problems.

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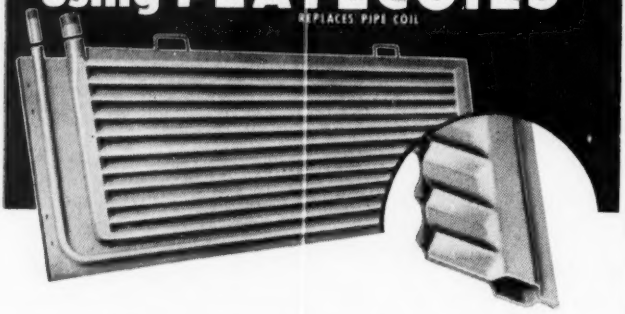


Peters-Dalton, Inc., Detroit, Michigan, has found it is less costly to buy Platecoils than to fabricate their own pipe coils. Platecoils are installed in a fraction of the time without the complicated racks needed for pipe coils. They have also simplified engineering and estimating. Considerable time is saved by the standard charts of sizes and capacities.

Send for complete technical manual and descriptive Bulletin No. P50.

PLATECOIL
Division
KOLD-HOLD MFG. CO.
LANSING 4, MICHIGAN

Stainless Steel Platecoils Available Now!

LOW FIRST COST

The initial cost of Platecoil is often 50% or more below the cost of equivalent pipe coil depending, of course, on the materials used in construction

EASY INSTALLATION

By the use of "quick change hangers" Platecoil installations can be made in open tanks in one-half hour or less by one man and a helper.

NO THREADED JOINTS IN TANK

The entire Platecoil is electric welded and pressure tested. There are no joints to corrode or leak. Both connections to the Platecoil can be located above the liquid level where there is no danger of thread corroding and freezing.

GREATER TANK CAPACITY

A 22" x 47" Platecoil gives the same heat transfer surface as 32 feet of 1½" pipe. This pipe requires a space approximately 30" x 60". Platecoil thus saves about 50% over equivalent pipe coil.

WEIGHS 50% LESS

Weighing only about half as much as equivalent pipe coil, Platecoil is easy to handle. A whole maintenance crew is not needed to transport and install Pipecoil.

TANK MAINTENANCE WITHOUT LOSS OF SOLUTION

There is no need for workmen to get inside the tank in order to make replacements or repairs. A Platecoil can be removed in a matter of minutes with the solution still in the tank.

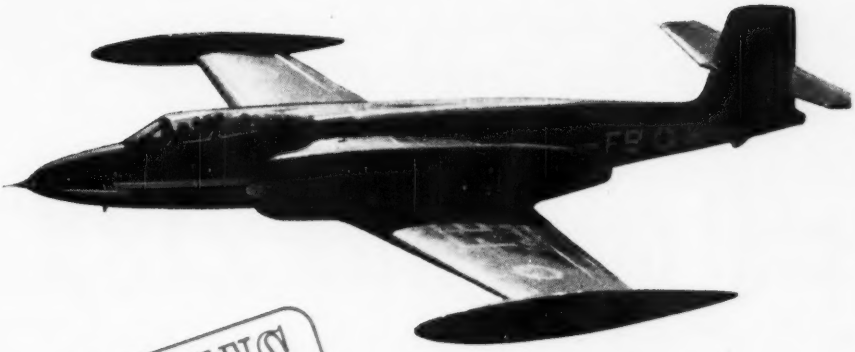
LITERATURE

The new Platecoil Bulletin furnishes a complete description of the Platecoil method of tank heating. Write for your copy today.

HIGH BTU TRANSFER

More prime surface of Platecoil can be installed in a given area than can be obtained with pipe coil. Thus a more compact Platecoil unit provides much greater BTU transfer per unit area than can be obtained with pipe coil. Quick starts in heating tank solutions mean more hours of productive time.

Kold-Hold Manufacturing Company, Lansing 4, Michigan



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STEVENS SPECIFIED

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Plating, anodizing, chromating and blackening machines are all by Stevens. That's because extreme accuracy is obtained with Stevens equipment. The A. V. Roe Company, Ltd., know *specification* processing is a routine production operation when they use Stevens.

If you have a precision plating and processing problem, see your nearest Stevens representative or write direct . . . *FREDERIC B. STEVENS, INC., Detroit 16, Michigan.*

Stevens Model B Automatic Rack-Type Plating Machine.

Visit us at the Metal Show—Booth 244. National Metal Exposition, Philadelphia Convention Hall, Philadelphia, Pa. October 20-24, 1952.

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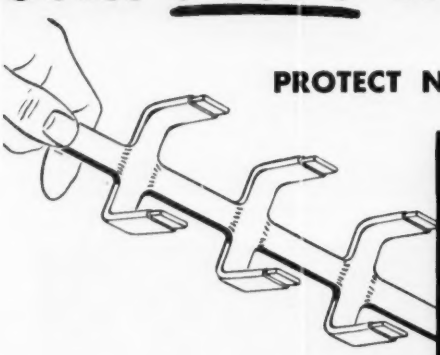
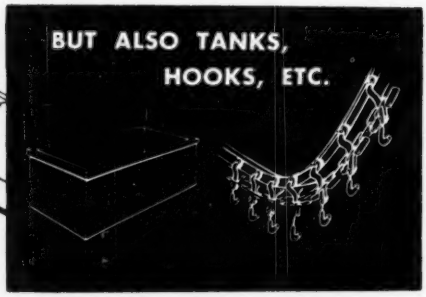
DETROIT 16, MICHIGAN

How to cut costs still more with "218X"



PROTECT NOT ONLY RACKS . . .



COATING 218X is so tough, so long-lasting a coating that the more you use it, the more money-saving protection you get. Of course, you derive the biggest benefit from the outstanding application for Coating 218X – protection of racks.

This green plastisol stands up in all cleaning, plating, and anodizing solutions—even vapor degreasing cycles. It resists impact and abrasion without chipping, cutting or damage. In short – it means minimum rack coating costs.

You can do the same on this other equipment:

- **Plating barrels**
- **Drain boards**
- **Anode hooks**
- **Tank screens**
- **Tote boxes**
- **Dipping baskets**

—all these and more can be protected longer, and with less maintenance expense, by means of the same Coating 218X you use for racks.

Make more use of your Coating 218X —you'll find *many* places where it can save you money, time and equipment. We'll be glad to tell you how to apply it.

UNICHROME Trade Mark **COATINGS for METALS**

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Los Angeles 13, Calif. • In Canada: United Chromium Limited, Toronto, Ont.

HOT Lacquer NEWS

PUBLISHED PERIODICALLY BY HERCULES POWDER COMPANY IN THE INTERESTS OF BETTER FINISHES AND FINISHING

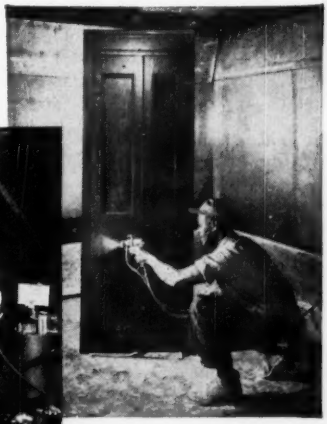
Western Electric Now Reconditions Telephone Equipment With Hot Lacquer

Switchboards, Booths, and Coin-Boxes Finished Faster and Better with One Coat Hot-Spray

Telephone Sales Division of Western Electric Company, Inc., which maintains the repair shops for reconditioning telephone equipment, reports reduced work in process, elimination of storage between coats and less spraying equipment per shop since switching from two coats of cold lacquer to one coat of hot lacquer. Because hot lacquer finishes are relatively unaffected by varying humidity conditions, blushing has been greatly reduced. Another advantage is that one Western Electric lacquer specification is now being standardized for all 28 repair shops.

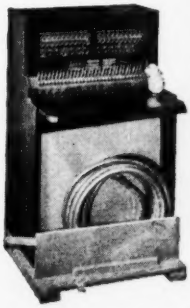
Learn more about hot lacquer for industrial and defense finishes—write for information and government specifications on lacquer.

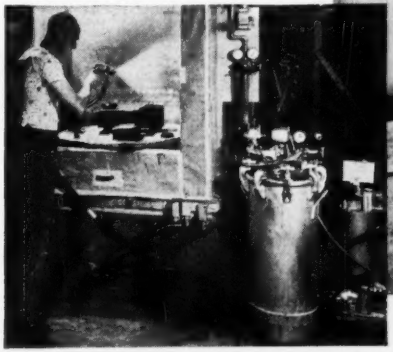
HERCULES POWDER COMPANY
INCORPORATED
Cellulose Products Dept., 927 Market St., Wilmington 99, Del.



Telephone booth gets "new look" with hot lacquer

Hot lacquered switchboard crated and ready for shipment





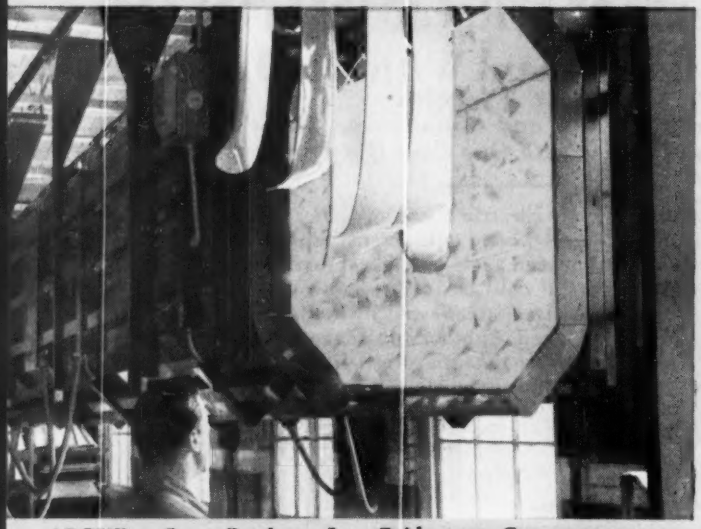
Reconditioned coin-box being sprayed with hot lacquer

CL52-4

Proved in over 7.

MOST EFFICIENT OF

TYPICAL FOSTORIA OVENS



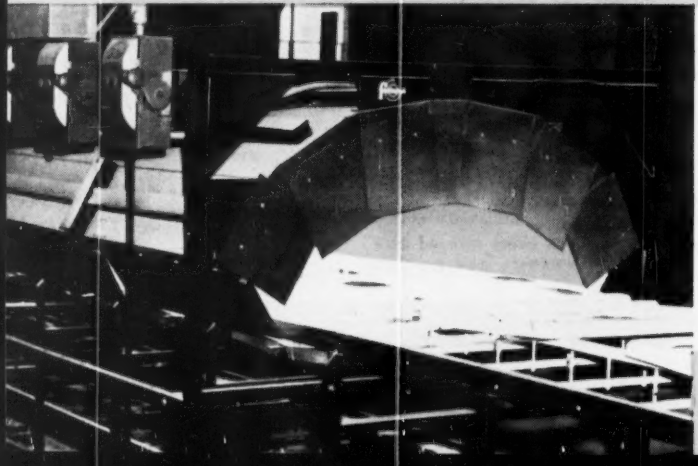
INSTANT RESPONSE

No Warm-up Time
No Shut-off Lag
Fastest Baking Method

MOST UNIFORM HEAT DISTRIBUTION

Evenray Reflectors Prevent Streaks, Hot or Cold Spots

ABOVE — Casco Products, Inc., Bridgeport, Conn., reports reduced operating cost with Fostoria Infra-red. Drying is accelerated and uniform with improved quality of finish over other methods. Various sections of the oven are controlled separately. Ceiling suspension saves floor space.



TO THE LEFT — Athens Stove Co., Athens, Tenn., uses Fostoria Infra-red for drying porcelain enamel before firing. They report (1) 4 times faster than other methods, 30 to 60 seconds drying time, (2) one-fourth less floor space, (3) cleaner, no combustion residue on work, (4) less maintenance, (5) thorough drying — no rejects.

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Oldest

000 Plants

ALL FINISH BAKING OVENS

FLEXIBILITY CONTROLLED
Infinitely Variable Output from 0 to 100%

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Most Production for Oven Size May Be Ceiling Mounted

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Gold Plated Oven Walls Give 98% Efficient Reflection

SAFEST CLEANEST, FINEST QUALITY BAKING
Outperforms Any Oven of Any Type

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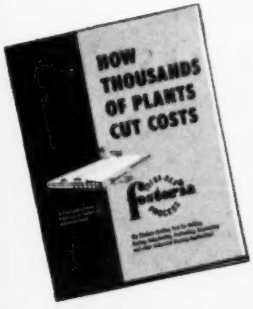
•
LOWEST MAINTENANCE COST

FOREMOST ENGINEERING "KNOW-HOW" *and* **FIELD SERVICE ORGANIZATION**



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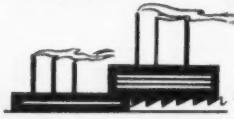

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for better aluminum cleaning and deoxidizing

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pf editorial

OCTOBER, 1952

Vol. 17, No. 1

Missionary Work

Groups from foreign countries are visiting plants in this country to observe methods of operation and production. It has been noted that the members of the groups interested in electroplating are not the "tank men" who are responsible for production, but technical men who are interested in the composition of the several solutions and in the control methods.

Due to time limitations there is probably more attention given to the finished products than to the condition in which they are received for electroplating, or the function of each operation previous to the electrodeposition of metal. Since the preparation of work for plating is not the same in every plant, the different methods seen by the visitors must be confusing. This is evidenced by the questions asked, and the trip reports submitted.

American plant men are not wholly acquainted with conditions at the inquirer's plant, and hence can not, no matter how willing, give information that is really helpful. It may be a better plan to select trained men and have them visit plants in other countries. At present one of the best technical men, who has had several years of practical experience in the production of automobile accessories, pays periodic visits to a foreign plant, and has been highly commended for his assistance.

From the reports and photographs in the electroplating magazines in Japan, it seems that Lt. Col. Ezra A. Blount is following that plan. He not only visits plants, but assembles groups to impart the knowledge he has gained from experience and from association with electroplaters in this country. He has observed the limitations under which production is carried on, and consequently can give the best assistance possible. His talks are given to individual groups of business men, technical instructors and students, as well as to the men who operate the plating rooms.

Lt. Col. Blount is doing real missionary work in the electroplating field.

George B. Hogaboom

Finishing Office Equipment with G. W. Durajet

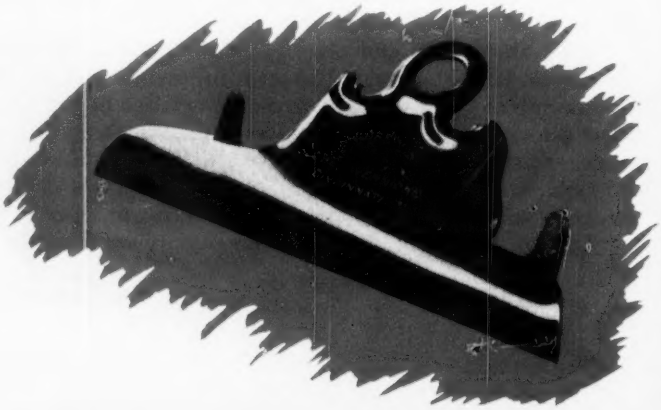
By FRANK L. BONEM
Associate Editor

PF FEATURE

Like so many other companies, the Globe-Wernicke Company of Norwood, Ohio, makers of office furniture and filing supplies, was confronted with the problem of finding a suitable finish for certain steel parts of the various items of office equipment manufactured by the company.

In keeping with the slogan of the company's president, Mr. A. C. Howard, "It isn't enough to keep up with the other fellow, you have to get ahead of him," an investigation was initiated to find a new finish for certain steel parts. In this search, prime consideration was given to corrosion protection since the company ships all over the world, and dry lubricating properties since the finish was to be used on movable parts such as typewriter lifts and channels on file drawers. A third consideration was the rough usage which the finish on all movable and stationary parts has to withstand in order to fulfill its part in upholding the company's reputation as a manufacturer of quality office furniture.

After extensive laboratory research, a penetrating black oxide finish was selected and named "G. W. Durajet." Once the new coating had been decided upon, the company promptly proceeded to design and build an entirely new department for applying the finish. Design of the finishing department was under the supervision of Benjamin Kleving, electrochemical engineer, and was carried out by the company's engineers and those of the Kirk & Blum



Manufacturing Company, the latter also doing all installation work. Figure 1 is a view of this department, which is clean, well-lighted, provides comfortable working conditions, and has automatic controls for high efficiency and safety. It is capable of achieving a production output of 5 to 7½ tons of work in an 8 hour day.

Parts to be processed fall into two size catagories, therefore dictating the method of handling and naturally influencing the design of the department. Very small parts, such as locking devices, brackets and clips are handled in steel Lasalco barrels; the larger parts such as filing cabinet channels are stacked in vertical, cylindrical baskets.

The Process

The 100 per cent steel parts are delivered to the department from the manufacturing bays in tote pans and undergo the following cycle:

1. Load ware in perforated horizontal barrels or in vertical wire baskets.
2. Clean in an alkaline solution made up of Detrex cleaner No. 61 at a concentration of 7 oz./gal. and held at boiling point (See Fig. 2).
3. Cold water rinse.
4. Pickel in muratic acid (3 to 1 by volume).
5. Cold water rinse.
6. Hot water rinse.
   This is a preheating operation to prevent a decline in the temperature of the processing tanks.
7. Dip in Du-Lite for 15 to 20 minutes.
   Two tanks are used in this step for greater output. The solution is automatically held at 312 deg.

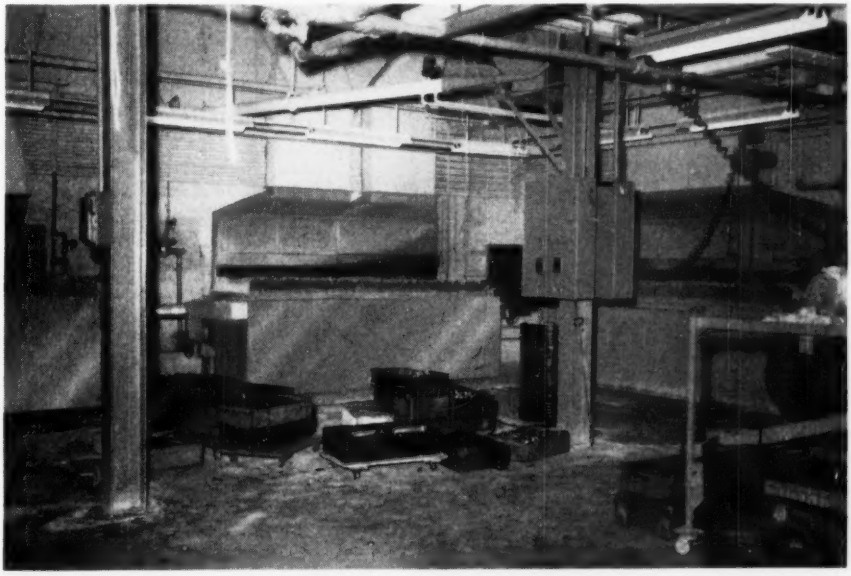
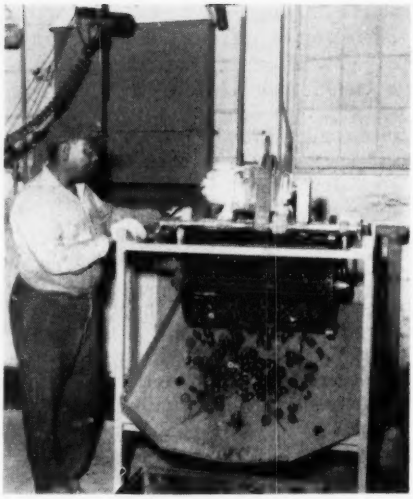


Fig. 1—A view of the black oxide finishing department showing the two chemical processing tanks. The two cabinets in the foreground contain the relays for the automatic controlling of the gas burners and fume exhaust fans.

Fig. 3—Finished parts tumble from the processing barrel, set in a special frame for this operation. The two hoists in the background eliminate all manual lifting.



F. and a concentration of 8 lb./gal. is maintained.

8. Cold water rinse.
9. Dip in 3 per cent muriatic acid solution to seal and neutralize the parts.
10. Rinse in boiling water.
11. Dip in hot Alrose Chemical Company's Jet Oil No. 1.
12. Unload barrels in fixture, as shown in Fig. 3.
    Two rotations of the barrel completely empty it, the parts sliding down the apron into tote pans. Larger parts are unloaded from baskets by hand.

Total time for actual processing, excluding steps 1 and 12, is 27 minutes. The oil dip in this process opens surface pores and thereby allows the inclusion of minute droplets of oil in the surface when the pores close by cooling. This not only makes the finish more rust resistant, but also imparts lubrication to the parts, a "must" in quiet efficient operation of modern office equipment.

The black oxide finish does not change the dimensional size of the ware since there is no metal added. Surface penetration of the metal is from .004 to .005 inches, which is well above government specifications (.002 to .004 inches).

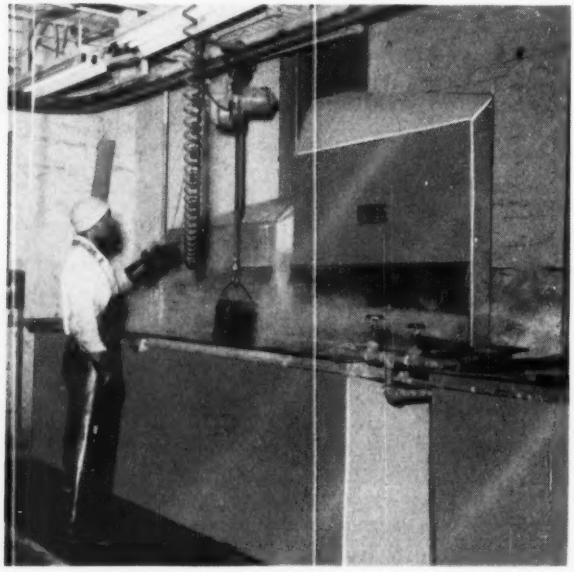


Fig. 2 — A basket of filing cabinet slides is dipped into the alkaline cleaner to remove oil and grease. Note the coiled, supported electrical cable.

The Equipment

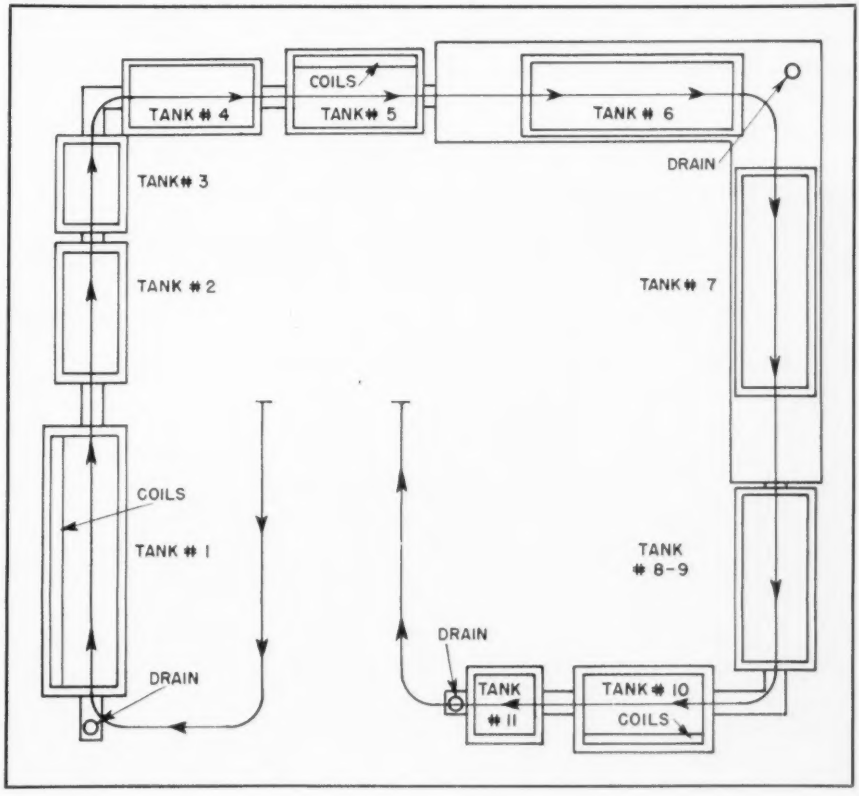
Sound engineering, consideration of ware handling, worker's comfort, and safety mark the layout of this department and the equipment therein. Figure 4 is a floor plan of the department showing location of the tanks, the overhead monorail for the hoists and the drainage system.

All handling, whether the ware is in barrels or in baskets, is accomplished by two electric hoists. To permit large radius moving of the hoists, electrical connections are made in the center of the rooms.

Two horizontal barrels which have their motor and drive unit on their frame (see Figs. 3 and 5), are employed. Electrical outlets for the barrels are provided on all tanks and on the unloading frame.

All of the 11 tanks which are utilized in this process are made of steel, the acid tank being lined with lead. The alkaline cleaning tank, the two hot water rinse tanks, and the oil dip tank are heated with steam coils. Size of these steam coils permit operating temperatures to be reached in 30 min-

Fig. 4—Layout of Globe-Wernicke black oxide finishing department. (*Drawing courtesy the Globe-Wernicke Company, Norwood, Ohio.*)



utes in all tanks. The two tanks containing the black oxide solution are gas fired with non-impinging Burdette burners. Fuel consumption of both tanks is 2,800 cu. ft./hr. It is kept to a minimum through the use of insulation and automatic temperature controls.

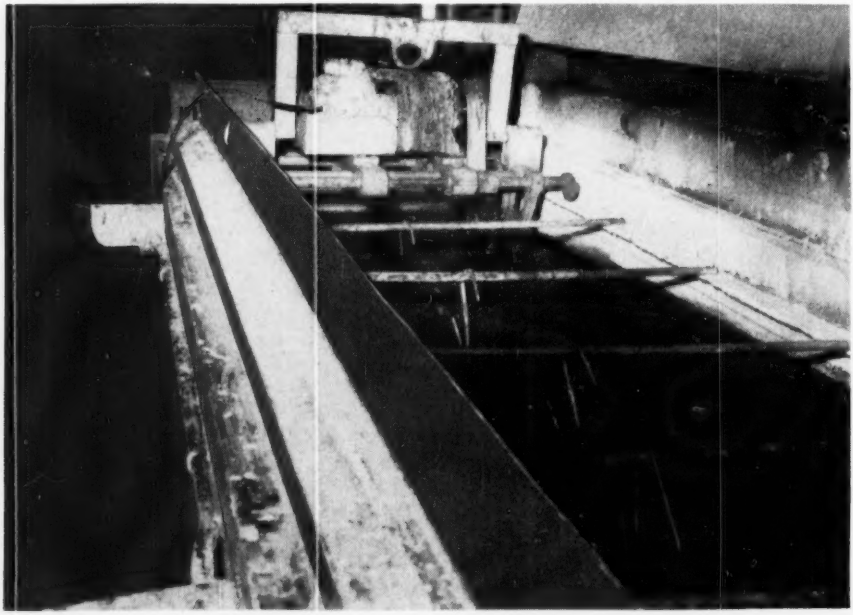
A drainage channel which connects all tanks to two floor drains, was built into the floor, to accomplish adequate tank drainage. The channel also serves as a means of keeping the floor reasonably dry. Floor boards, together with proper personal equipment, provide additional comfort for operating personnel in the department.

Since the two processing tanks are larger than all the others, and have burners under them, they are set below the floor level in order that a comfortable working height on all tanks can be maintained. The two coating tanks have a 2-inch drain at one end and a 2-inch overflow directly above this drain, two inches below the top. Similar drain and overflow piping is also installed on the cleaner tank, the neutralizing tank, and the two hot water rinse tanks. The oil tank is drained through a valve located at the bottom of one side.

Due to the longer immersion time in the coating tanks, cross bars are provided on which the vertical baskets are hung with S hooks (see Fig. 5). One end of these tanks is left free of bars to allow room for the rotating horizontal barrels.

As may be seen from the various illustrations, all tanks are cross-ventilated to keep the room vapor-free and at a comfortable working temperature. For the smaller tanks, exhaust

Fig. 5—A view of the first tank in which Durajet is applied. Projections along the left edge of the tank are covers for electrical outlets which may be seen on all tanks. Both hand baskets and a tumbling barrel filled with parts are being processed.



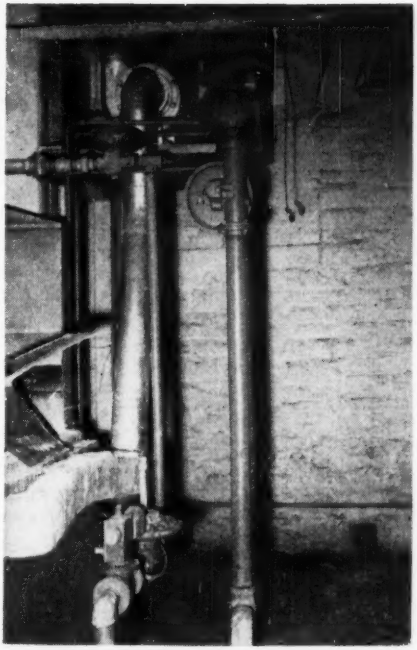


Fig. 6—Close up of the control end of one of the black oxide tanks showing gas and exhaust vapor lines with automatic shut-off and supply-control valves.

●

Automatic Controls

In addition to the aforementioned ventilation, special fume exhaust ducts are located above the burners on the two black oxide tanks (see Figs. 1 and 6) to draw off all products of combustion. These ducts are connected to two special centrifugal blowers which have a capacity of approximately 600 c.f.m. each. Controls for the blowers and the valves in the gas lines are inter-connected through an automatic electric relay system.

Controlled by thermostats, this system prevents the opening of the gas valves before the blowers have been started and all vapors withdrawn. In this manner, all explosion hazards are completely eliminated by these relays, whose housings may be seen in Fig. 1, mounted on the vertical I-beams.

The system also controls the volume of gas being burned in the burners. The

fans of 3,500 c.f.m. capacity, driven by ½ h.p. motors, are used. For the two larger tanks, two ducts, each with its own fan (a total capacity of 7,000 c.f.m.) are employed. All intake louvres are installed along the wall at tank-top height.

●

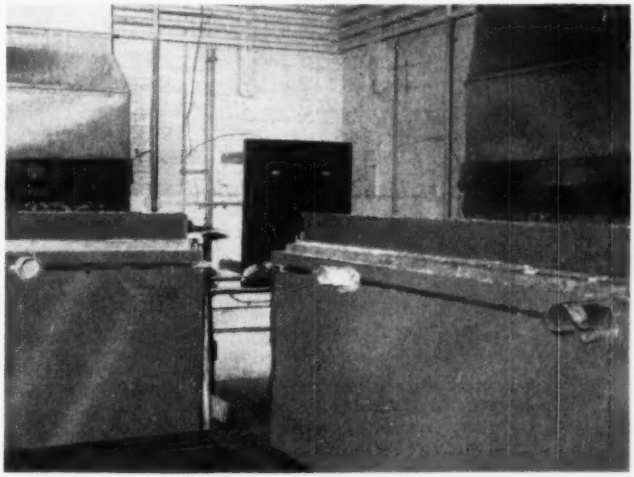


Fig. 7—A view of the two coating tanks showing the locations of the control board of the Pentrate Automatic Concentration Controller. Exhaust ducts are located opposite the workers' platform in order to provide a cross draft away from operators.

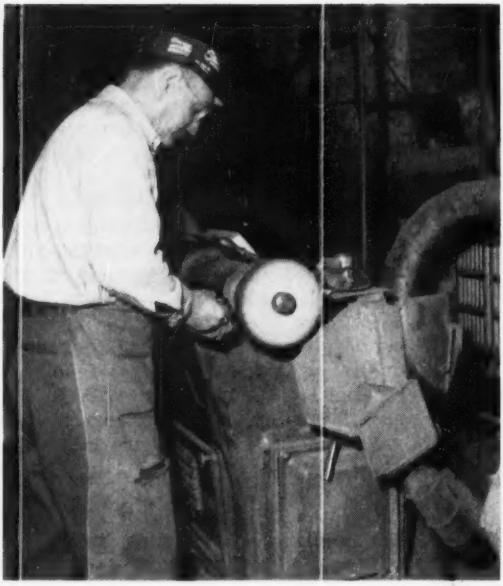


Fig. 8—After going through exactly the same finishing cycle as all other parts, clips are given a high lustre finish by color buffing. *(All photos by PRODUCTS FINISHING)*

burners are capable of producing 1,400,000 Btu/hr. which is necessary to carry the load when the tanks are first heated. Upon reaching operating temperature, the controls automatically cut the burners to "low," since only the heat lost to the processing parts and to evaporation has to be supplied. This is accomplished by electrical impulses which are sent by the relays from thermostats to controller valves in the gas lines (see Fig. 6). The system also has an automatic shut-off on the gas lines, should the flame go out.

Correct solution level and chemical concentration in the two oxide tanks is maintained by a Heatbath Penetrate Automatic Concentration Controller which may be seen in the rear of Fig. 7. Regulation in the system is achieved through thermostats which open solenoid valves, thereby allowing hot water under pressure to flow into the tanks when the solution level drops. Lights on the panel board tell the supervisor at a glance which valves are open and which are closed. Two scales indicate the temperature.

The black oxide process and the finish it produces has met with such success that the company has adopted it for finishing the steel clips for its clipboards (see article heading). The clips go through exactly the same process as other parts. However, they are cut down before being finished on an Airway buff rotating at 3,200 r.p.m. using a white finishing compound.

After the oil dip and cooling, the clips are color buffed with Jet 300 white lime coloring compound on a loose 8-inch buff, rotating at 2,800 r.p.m. Figure 8 is a view of that operation.

The complete development of Durajet, from initial laboratory research to the building of the production department illustrates the advanced thinking of this company's management.

Black oxide coatings are finding wider uses, as illustrated by the application of this finish, to many metal parts. Undoubtedly other applications of this finish will be found by this, and other companies in the future.

ACKNOWLEDGMENT

The author acknowledges with sincere thanks the cooperation of Benjamin Kleving, electrochemical engineer and general foreman, in providing information contained in this article.

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no job too unusual!

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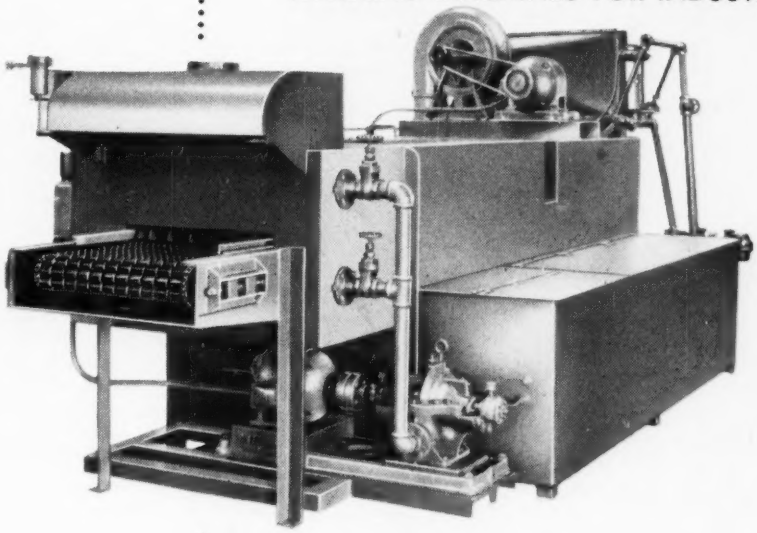

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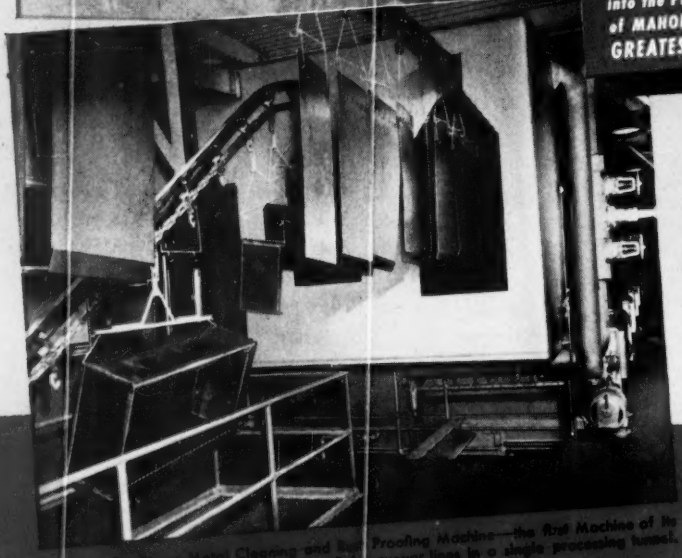

Above: Mahon Self-Housed Finishing System installed on the roof of the Hamilton Manufacturing Company's Plant, Two Rivers, Wisconsin. Note Conveyor Tunnels extending across the roofs of buildings to fabricating and assembly areas. Upper Right: An 87 ft. Mahon Hydro-Filter Spray Booth. This is one of four Mahon Hydro-Filter Spray Booths in the Hamilton installation—two of the four are automatic, electrostatic spray booths.

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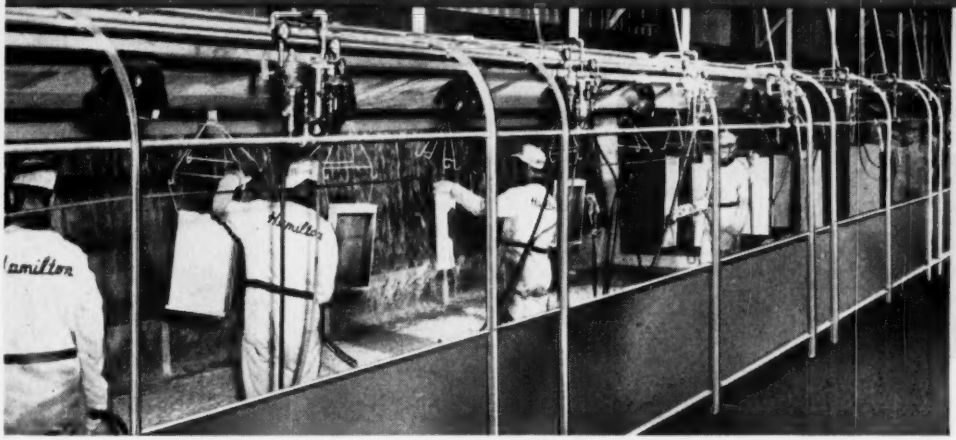

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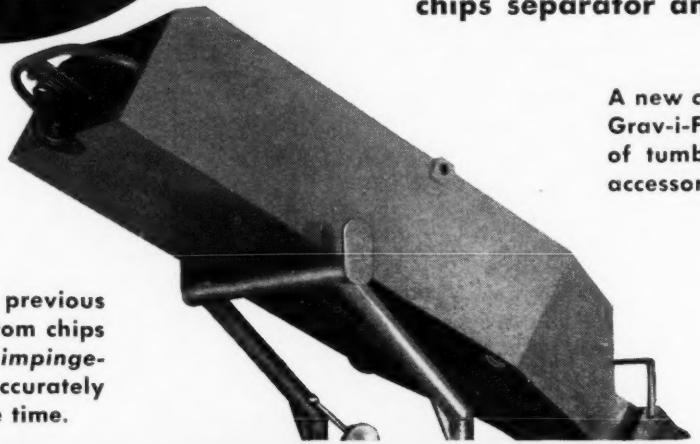

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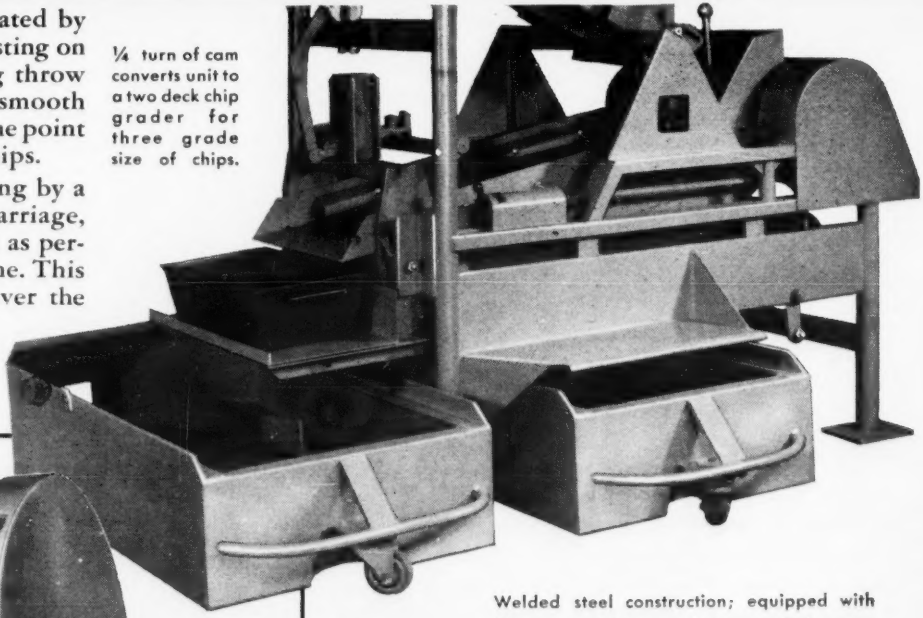
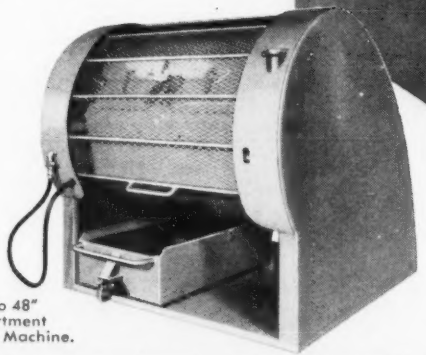
¼ turn of cam converts unit to a two deck chip grader for three grade size of chips.



Welded steel construction; equipped with ¾ h.p. variable speed drive; switch; overall floor space 3' x 6'; with pans 6' x 8'.



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Rigid Production Control Assures Quality Enameled Products

By GILBERT C. CLOSE

TO the casual observer, and even more so to anyone familiar with the clash and grind of many industrial concerns, production at the sprawling Smoot-Holman Company plant, Inglewood, California, seems as frictionless as clean oil gliding through a pipe. In fact, all production seems geared to the quiet efficiency of the continuous enameling furnace chain that each year carries more porcelain enameled commercial and industrial lighting fixtures through the furnace than are produced in any plant west of Chicago.

Why this smoothness? Why such seemingly effortless production? Mainly because every machine in the plant is fitted exactly to the job it must perform, and the guesswork is taken out of all plant processes by a system of rigid laboratory control.

The Smoot-Holman Company is one of the largest firms on the west coast devoted almost exclusively to finishing porcelain enameled products. Aside from enameled lighting fixtures, a

Fig. 1—Layout of principal products produced by Smoot-Holman Co. (Left) Fluorescent and circular incandescent lighting fixtures. (Right) Sanitary pressed steel plumbing fixtures including a lavatory and sink.

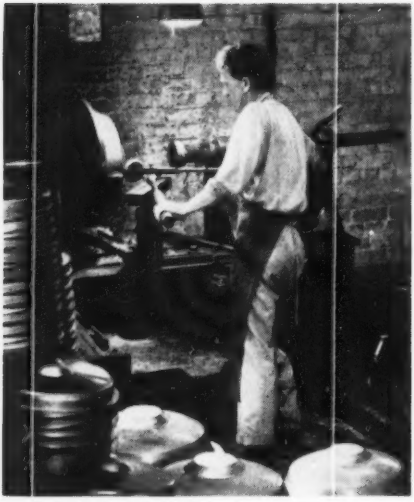


Fig. 2—Spinning incandescent lighting fixtures on a Bliss 30-inch spinning lathe.

heavy volume of porcelain enameled pressed steel sanitary plumbing fixtures is turned out (see Fig 1.). Sidelines include stainless steel machine gun ammunition chuting, and press-formed aluminum industrial protective helmets, but neither of these products assume feature proportions in the overall production picture. All production insofar as possible is funneled in large order lots through the same production facilities, thus minimizing machine setups and serving to keep each machine operating on a steady production keel.

Fabrication

Production departments are located in logical sequence in the 15 buildings covering the seven-acre factory site. Work in progress flows smoothly from one department to the next with a minimum of handling and few intermediate storage problems. Constant inspection and line checks assure uniform quality and eliminate rejects before additional lost work is performed on them.

The materials receiving and blanking departments are housed in a single building. The incoming cold or hot rolled enameling iron, aluminum sheet stock, and 18-8 stainless steel sheets are stored adjacent to shears, brakes and punches that blank the material to the correct size before it passes into production. Indoor storage prevents weathering of the raw sheet stock and minimizes subsequent cleaning and pickling problems.

The metal forming department includes a 425-ton Lake Erie draw press used exclusively in forming sinks and lavatories, two 125-ton and one 110-ton Bliss Presses for intermediate work, and a battery of smaller presses of various makes for detail press work. A standard commercially available forming lubricant is used throughout the department. Interchangeable press dies and other tools are located on shelves behind a partition where they are out of sight yet convenient to the press operators.

Three spinning lathes are used for spinning circular incandescent reflectors—two are spinning lathes (see Fig. 2), while the third is a reworked ordinary shop lathe used for beading and trimming the spun reflectors. Enameling iron up to 18 gauge in weight is spun to shape. A few neutral shapes, which will be subsequently press formed, are spun. This pre-spinning produces initial metal breakdown and reduces the severity of subsequent press forming.

The aluminum industrial helmets are press-formed in this department, using four or five-stage press dies to produce the required draw. Either 24 SO or 75 SO aluminum alloy sheet material blanked to size is used. The formed helmets are solution heat treated in a salt bath furnace of company design. Special racks are used to separate the helmets during the heat treating process.

The components of formed parts

that require additional assembly go from the press department into a second building tooled with spot welders, gas welding equipment, and assembly presses. Figure 3 is a view of the spot welding department. Acme spot welders of various capacity are used. Company-designed portable spot welders are available for certain types of work. A company-designed assembly press is used for fitting matched parts together prior to spot welding.

An interesting process is used in the fabrication of concentric ring lighting fixtures, widely used in offices, schools, and similar establishments. A small metal roll forms the rings from strip-cut stock, and these rings are torch butt welded without the use of additional weld metal (see Fig. 4). Approximately one ring a minute can be hand welded in this manner. Though it is admitted that flash butt welding would be faster, subsequent removal of flash would boost costs above the current level. By merely fusing the butting ring ends together without adding metal, only light peening and buffing operations are required subsequent to finishing.

Cleaning and Pickling

Parts from this department, and others from the press department that do not require intermediate assembly, converge in the pickling and cleaning room, a view of which is shown in Fig. 5. Seven 4 by 12-foot tanks are used in this department, heated by a convertible gas or oil-burning burner. The tanks are arranged in a single row, and work is processed in batch baskets handled by an overhead monorail hoist and conveyor.

The first two tanks contain an alkaline cleaner, maintained at an operating temperature of 212 deg. F. The third tank is a hot water rinse main-

Fig. 3—View of spot welding department. Reflector necks are pressed into place by assembly press prior to spot welding.

Fig. 4—Butt welding a concentric ring lighting fixture. The butts are merely fused together —no additional weld metal is used.

tained at 200 deg. F. The fourth tank contains the sulfuric acid pickling solution held at from 145 to 155 deg. F. The fifth tank is a cold water rinse, and the sixth contains a neutralizing rinse maintained between 195 and 200 deg. F. All solutions are under rigid laboratory control and are checked every 24 hours for concentration and additive requirements.

The seventh tank is a drier with air temperatures ranging between 350 and 400 deg. F. The drier heat enters through perforated unbaffled pipes, thus maintaining constant heat circulation throughout.

There are some parts that will not be porcelain enameled, and these are treated in a phosphatizing bath after cleaning. This bath produces an iron-phosphate surface coating which is corrosion resistant and provides an excellent bonding surface for subsequent lacquer coatings. The phosphatized surface is suited especially for the somewhat flaky aluminum lacquer that is largely used on parts that are not porcelain enameled. A suction-type paint booth is available for spraying the aluminized coating. Other types of organic finishing, when required, are usually applied by a contractor.

Porcelain Enameling

A huge proportion of all parts produced congregate finally in the porcelain enameling department. This department, one of the largest in the country, is characterized by handling efficiency and rigid laboratory control methods used to maintain uniformity and quality.

Frits are ground by six ball mills ranging in size from 150 to 1400 pounds. The average grinding time per batch is 11 hours, but varies, of course, with the size of the mill and condition of the balls. Each batch is laboratory tested with regard to fineness, gravity, and so on before going to the slip tank.

The enameling furnace, at one time the largest of its type in the world, is a Ferro continuous U-type, with a 7-foot wall. Overall length is 90 feet, with a 41-foot firing chamber and 49-foot preheat zone. A convertible burner permits use of either gas or oil for fuel. Enameling temperature is automatically maintained at 1550 deg. F. The photograph used on the first page of the article is a view of the interior of the furnace.

On occasion the enameling furnace is used for annealing press-formed parts. This stress relief treatment removes internal metal strains and minimizes warpage during subsequent firing of the porcelain enamel coating. An annealing temperature of 1420 deg. F. is used.

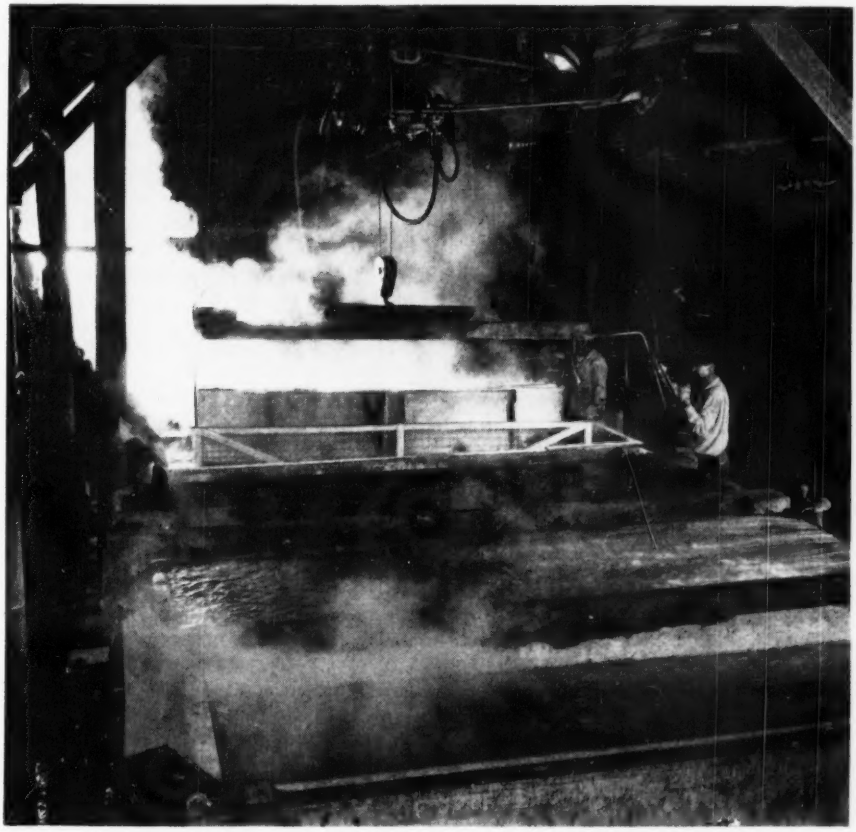
Three methods are employed in the application of ground coat slip. All lighting fixtures are hand dipped to assure uniformity and eliminate the formation of "tears" (edge droplets of

slip which tend to chip after firing). The ground coat is sprayed on sinks, and lavatories are tank-dipped and drained. Ground coat slip tanks are emptied and cleaned after each shift, the contents purified by magnetic separation and Roto-spray, then refilled with a slip that meets laboratory specifications.

Seven booths with pressure-type tanks are available for topcoat application. Several of these booths are provided with motor-driven turntables for spraying circular shapes. Incandescent reflectors are given a two-color topcoat in a single firing by first spraying exterior green, drying, spraying interior white on the reflecting surfaces, then brushing the edge bead through to the ground coat.

The continuous drying oven chain parallels all spray booths and dip tanks. The work passes through a 50-foot drying oven maintained at 450 deg. F. As it emerges from the drying oven, the dryer chain parallels the fur-

Fig. 5—View of the metal cleaning and pickling department. Note water spray used to skim surface of rinse tank.



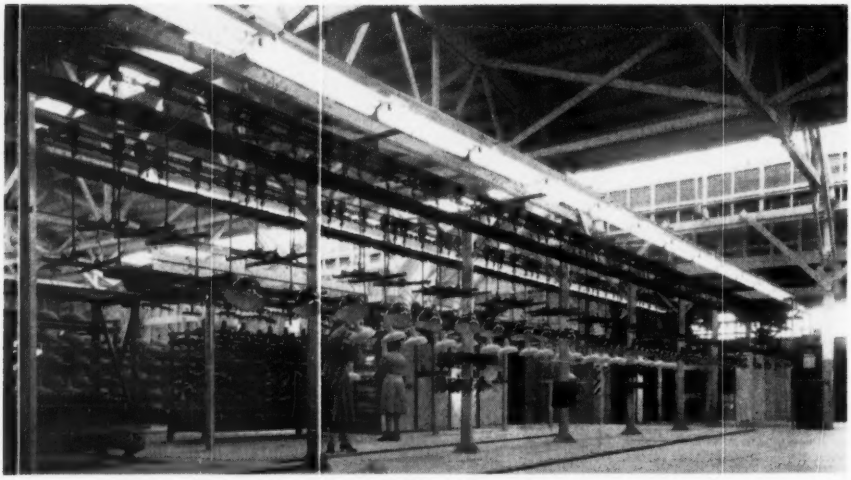


Fig. 6—The enameling furnace chain (front) and drying oven chain (rear) parallel each other for approximately 50 feet to simplify transfer of work from one to the other.
(All photos courtesy the Smoot-Holman Co.)

nace chain for approximately 50 feet, thus simplifying transfer of work from one to the other. (See Fig. 6.)

An acid-resisting enamel is used on all sanitary plumbing ware. Spot checks are run on parts from each batch of slip, and continuous visual inspection is maintained. Final inspection is accomplished in a separate department where all products congregate prior to shipping.

The Smoot-Holman Company has built an enviable record of excellence for their lighting fixtures. Fixtures must meet rigid E.T.L. (Electrical Testing Laboratory) specifications and bear the R.L.M. label. This emblem denotes that the reflector meets the highest national standards for industrial and commercial lighting equipment in regards to thickness of the enamel coating, reflectivity, light distribution, and so on.

The company is self sustaining to a large degree. Very little sub-contracted work is done with outsiders. A maintenance production department keeps all plant facilities in good working order, and turns out many items of plant equipment such as hand trucks, shelving, and work tables. A small but well equipped machine shop and tooling department designs and produces all necessary machine tools including press dies, spinning blocks, welding jigs, and production equipment.

The only purchased parts received in volume are light sockets, switches, fluorescent starters, ballasts, and wire for lighting fixtures. These parts are assembled into the lighting fixtures in a separate department, then inspected and tested prior to shipment.

To the experienced observer, it is evident that every operation in the Smoot-Holman Company shops is carefully planned to contribute to the quality of the finished product. Indoor storage of raw stock, numerous draw presses each tooled for specific types of work, modern equipment, and rigid laboratory control over all plant processes, each contribute to the single end of product quality.

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An Electronic Finishing Process

By JOHN STARR

ELECTRONIC coating equipment recently introduced to western manufacturers by Baron Industries of Los Angeles facilitates the fully automatic application of low viscosity finishing materials to a variety of products in large or small quantities with standard types of spray booth accessories.

In essence, the operation of this equipment is based on the electrostatic finishing principle—its purpose being to ionize sprayed coating particles in a high-voltage electric field, so that the particles will be attracted to conveyor-grounded product surfaces. However, it is a method of utilizing the principle that is new in its application.

For example, the ionizing electrodes comprise metal tubes, each having a series of fine projecting points, instead of a sequence of wires. Since metals are electropositive elements in general, they are characterized by atoms which may readily lose one or more electrons. These relatively mobile electrons exist in a constant state of dissociation from the atoms and may be caused to drift through the metal under the action of applied electric forces, thus forming the ordinary conductive current.

When additional energy is added to the metal (from mechanical, electrical, thermal, or photo-optical sources), some of the unbound internal electrons may be given enough energy and sufficient velocity in the direction of the surface of the metal to escape the potential barrier which normally holds them within the metal. When such electrons free themselves, they are said to be thrown off by electron emission—a phenomenon characterized by the source of energy as thermionic, photoelectric, secondary (mechanical), or field (electrical) emission. Electron emission in one or more of these forms is necessary if electrons are to pass from an electrode into space for subsequent collection by another electrode.

The spontaneous discharge from the "emanating" electrode in the subject system is known as field (or cold) emission. The configuration of electrodes is important in the production of cold emission because it is necessary to raise the electrical stress in the surrounding dielectric (air) above a critical figure before any reaction takes place. The cold emission is known as corona discharge or Townsend discharge and is accompanied by a luminous phenomena which is visible only in a dark room.

The corona discharge appears on very thin wires, sharp points, or sharp edges. Only with very thin and very

More news about getting "a better start for your finish"

Soak-tank cleaning costs cut 50% with an amazing Pennsalt Cleaner

If you think the last word has been said on soak-tank cleaners, here's a straight-from-the-field case history that may change your mind:

The operators of a porcelain enameling plant in Illinois were having difficulty in removing stamping oils from parts to be enameled. The parts were cleaned in two steam-heated, air-agitated soak tanks with an alkaline cleaning compound in solution. The Pennsalt representative recommended that the company try Pennsalt Cleaner #39—with these results:

Now the operation requires 3123 lbs. of Cleaner #39 every three months. Before, it required 5162 lbs. of the former material for the same period—a saving of about 40% on poundage alone! The actual dollar saving is even greater because Pennsalt, a basic chemical producer, sells its cleaner at a lower cost per pound. But that's not all!

Now a tankful of Cleaner #39 lasts six weeks; the cleaner formerly used was exhausted after three or four weeks. And as for the quality of the job done—rejections due to poor cleaning have now dropped to an all-time low! In fact, the operators of the plant are so pleased with this 50% over-all saving, that they have, on their own initiative, persuaded a fellow manufacturer to switch to Pennsalt Cleaner #39!

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Send me information on Pennsalt Cleaner #39 and how I can use it to cut my soak-tank cleaning costs.

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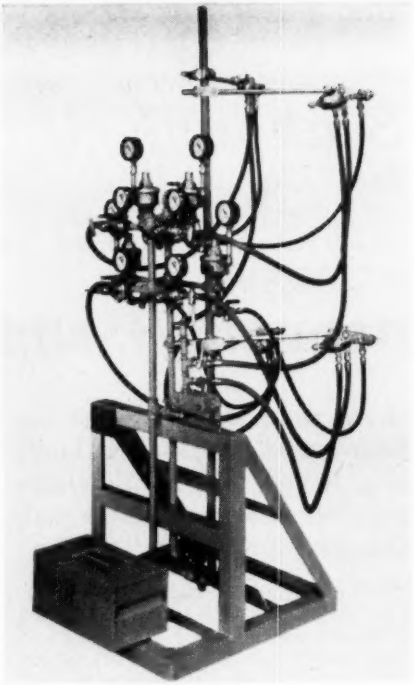
Fig. 2—Closeup view of a typical fixture used in mounting spray guns for automatic electronic finishing operations. A pressure gage and valve makes it possible to regulate the output of each individual gun.



clean wires can a uniform discharge be maintained along the entire wire and a uniform current generated therefrom. When wires like those used in conventional industrial practice are in use, more or less isolated discharge points are eventually formed. These points are produced by burns or points on the wire, microscopic roughness of the metal surface, or surface contaminants; and, of course, they are subject to numerous deviations with reference to their locations from time to time.

Tubular electrodes, on the other hand, establish permanent ionizing points (since sharp edges on the tubes serve the same purpose as extremely fine wires) and have much greater mechanical strength.

A strong electrical field is produced between each ionizing electrode and the grounded ware with the new equipment by impressing as many as 10,000 volts d.c. on the electrode. The sharp points on the electrode strengthen field intensity and create the electrical discharge required to ionize

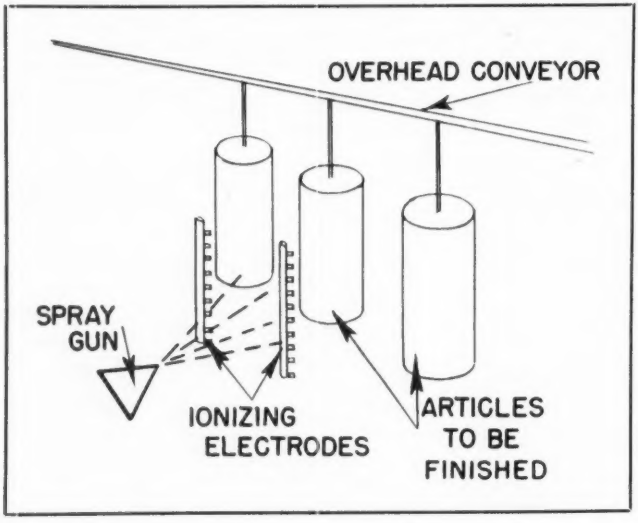


Fig. 1 — Schematic diagram showing basic components used in connection with new electronic finishing process.

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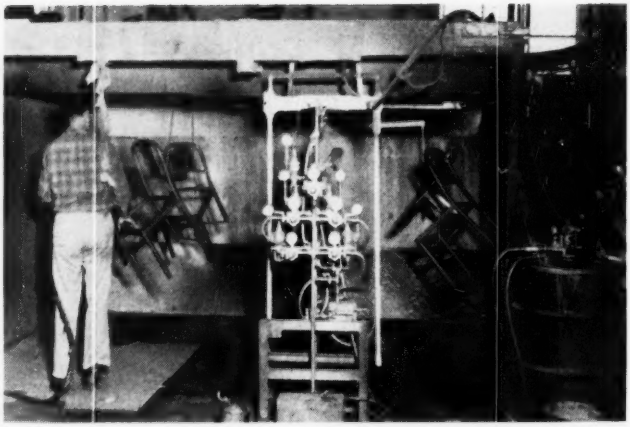

Fig. 4—A manual spray gun operator touches up the less accessible areas of chairs in the same booth that is being used for the automatic electronic finishing of the chairs.

the molecules of air in the vicinity of the points. Positive ions of air are then collected by the electrode, while negative ions are driven across the air gap in the direction of the grounded ware under the action of the voltage gradient.

The flow of negative air ions occurs independent of the spray painting operation. Current flow depends on the size and construction of the electrodes, surface area of the ware, spacing and surface area of the electrodes, and impressed voltage. Therefore, the number of spray guns used and the volume of atomized paint in the air has little effect on the electrical characteristics of the system.

Rapidly-traveling air ions are driven from the individual discharge points to the grounded ware; and, when the intervening air is filled with small atomized paint particles, collision of negative air ions with the coating particles causes the latter to become negatively charged. Thus, an essential factor in the efficiency of

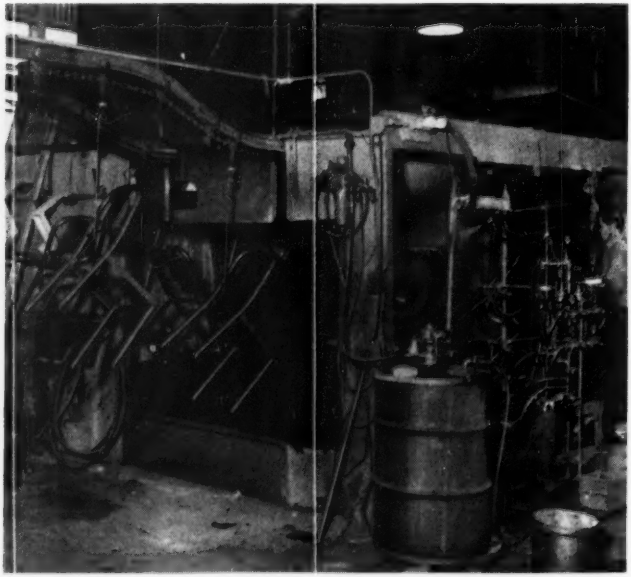

Fig. 3—Electronic finishing setup used in coating conveyor-borne frames for chairs. Note the short distances between automatic spray guns and deposition surfaces.

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the equipment is the maintenance of maximum difference in voltage between the ionizing electrode and the grounded electrode. This is determined by electrode spacing, electrode design, and electrical wave form.

The charge on paint particles in ionized air increases very rapidly at first, then more slowly. The increase finally becomes so slow that, even if the particles could be kept in the field for several hours, no change in the charge would be observed. This critical charge is almost a linear function of the radii of the particles and depends to a degree on the ion density. A doubling of the critical charge can be accomplished by increasing ion density about 100 times. The charge on the particle will constantly grow due to the stream of ions impinging on and adhering to the surface of the particle; and, as the charge on each particle increases, a gradually-intensified repellant force will be exerted on other approaching ions, thus limiting the charge.

Once the paint particle becomes charged, the repulsive force of the electrode and the attractive force of the ware precipitates the particle on the ware, as heretofore explained.

Along with the precipitation of particles due to the electrical field, there is another sustained locomotion due to the electrical "wind" currents. Rapidly-moving air ions, driven in a beam from emitting points of an ionizing electrode toward a grounded product surface, entrain ambient air and coating particles suspended therein—accelerating movements of the particles by intensifying the effects of purely electrical forces.

Because of the continuity of the air flow, and because of its deflection and rebound when it approaches the ware, vortex formations (which may be visualized if adequately illuminated) are produced; and, in this connection, it is interesting to note that the action of the "electrical wind" currents is very similar to the action of atomizing air currents.

Equipment for Spray Application

Standard pneumatic spray guns of

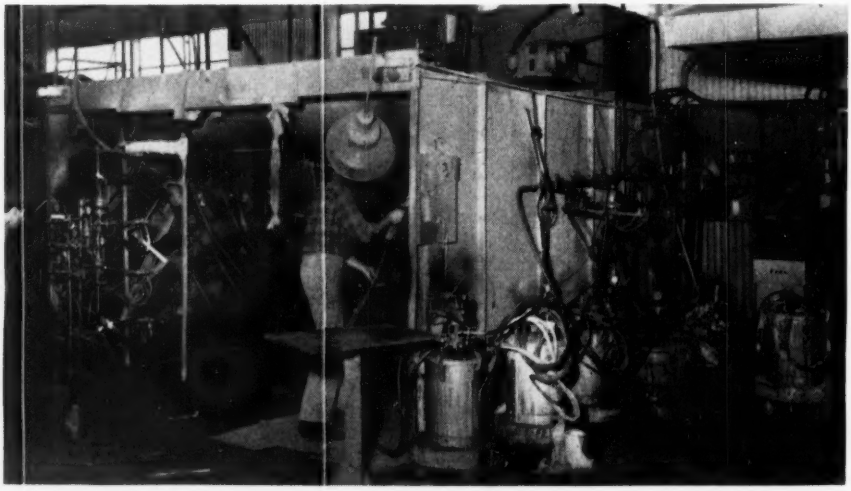
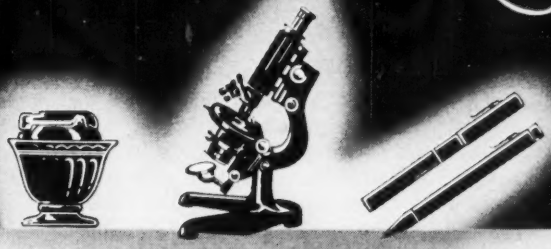


Fig. 5—Electronic finishing setup installed by Baron Industries at Los Angeles. Note electronic power pack in the extreme right center portion of this photo.

Rhodium Plating



Rhodium is one of the six platinum group metals. It is hard and has an untarnishable brilliant white color. In electroplating, it produces beautiful results and is widely used for this purpose in jewelry — even precious metal jewelry. Its high reflectivity makes it excellent for mirrors for motion picture projectors and similar purposes. With restrictions upon usual plating metals, rhodium is the logical alternative for plating optical mounts, contacts for communication equipment, radar components, pen and pencil sets and a host of like objects.

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the type that can be used to atomize virtually all liquid coating materials may be fixture-mounted, individually or collectively, for use in connection with the new electronic finishing process. Numerous types of mounting fixtures for the guns can be quickly made to order in conformity with specialized finishing requirements, and as rule the alignment of each fixture is such that the output of each gun will be aimed at right angles to the surfaces of the products that must be coated.

The perpendicular alignment of spray guns and work is by no means a standard practice in the use of conventional electrostatic finishing equipment; but, according to Baron engineers, this greatly reduces the number of coating particles that would otherwise be wasted by making it necessary for the particles to travel parallel to the electrical force lines. When particles are sprayed from a different angle, they explain, it is necessary to alter the direction of the spray so that it will reach a given deposition surface —all of which necessitates the use of a longer electric field and creates a dispersion effect (due to turbulent exhaust currents), causing substantial quantities of coating particles to be lost as the result of drying action and undesirable applicational forces.

An especially interesting aspect of the new electronic finishing equipment is the fact that it enables a deposition surface to serve as a sort of baffle plate in capturing atomized coating particles. If a particle is not applied immediately, it must be deflected 90 degress or more before it is lost; and, since the velocity of a particle is greatly reduced when its direction is chang-

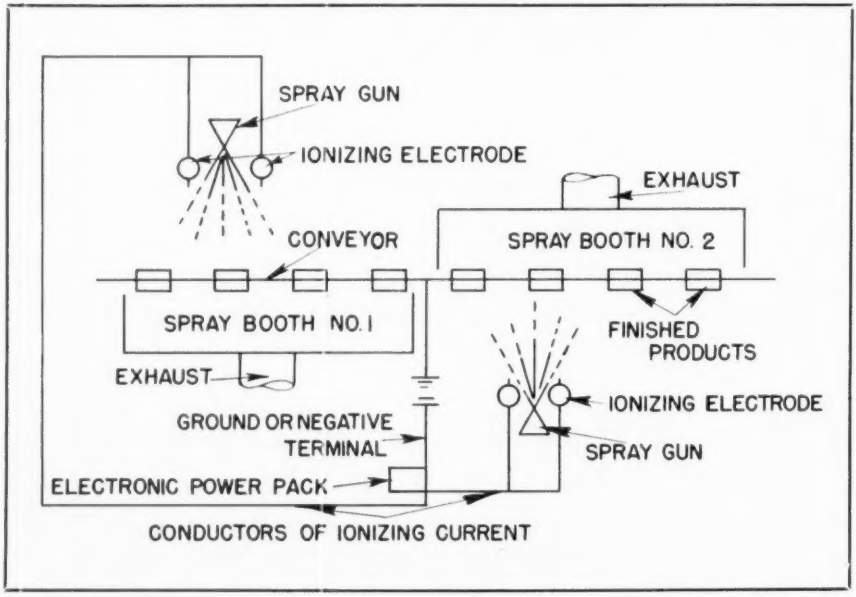

Fig. 6—Schematic diagram showing how one electronic power pack can be used to power ionizing electrodes and related components for automatic finishing operations at two different coating stations. A setup of this type can be used for the alternate coating of two panel surfaces with relatively large dimensions.

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ed, there is a very good chance that deflected coating materials will eventually reach a deposition surface due to the action of continuous electrical forces.

Low atomizing pressures tend to supplement the latter forces in reducing particle losses due to rebound; and, where the distance between a spray gun and the work is regulated so as to minimize overspray losses, the deposition efficiency of the electronic equipment may exceed 90 per cent by a sizeable margin.

Power for the ionizing electrodes is derived from a 110-volt, 60-cycle alternating circuit by means of a high-voltage transformer and a full-wave electronic rectifier.

A vacuum tube in the main power circuit halts all finishing operations when there is a substantial surge of amperage in the electronic equipment, since too much amperage invariably denotes a dangerous sparking condition. The possibility of a fire or accident is slight even if the safety tube should fail because the design of the equipment is such that all components must function properly before finishing operations can take place.

The electronic power supply is portably housed and can be operated by means of a plug-in attachment on any 110 volt alternating power line.

Where it has been necessary to use the new equipment in finishing articles which could not be closely spaced on a conveyor, an automatic tripping mechanism has been installed for the purpose of conserving coating materials. Function of this mechanism is to turn the spray guns off at times when there are no products to be finished directly in front of the output nozzles.

Special rotation fixtures have also been used on conveyors where it was possible to finish two or more surfaces of a product in one automatic spray operation.

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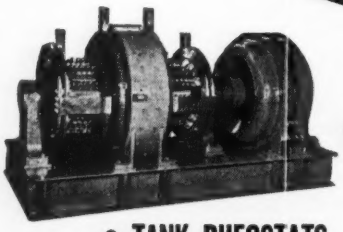

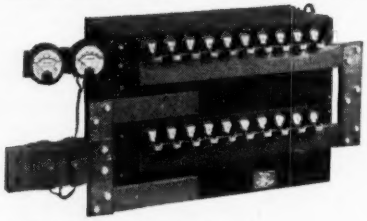

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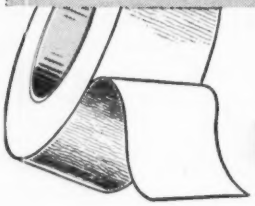

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Products that have to date been coated by means of the new electronic equipment include steel pails, blitz cans, metal chair frames, automatic washer and dryer housings, gasoline engine components, steel cabinets, artillery shells, and steel pipes. Finishing materials employed include porcelain enamels, baking enamels, lacquers, oil paints, and water dispersions.

As indicated by Fig. 4, some touch-up work has been required where the intricacy of a product caused certain deposition areas to be inadequately accessible to the automatic spray guns; but, in virtually all cases, areas requiring manual touch-up work amounted to less than 5 per cent of the overall surface areas that were actually finished. Further, because the total electronic spray zone has rarely occupied more than 42 sq. in. of space, it was usually possible to accomplish such work in the same booth that was used for automatic finishing operations.

Saving in terms of coating materials have ranged from about 30 to 70 per cent, and rejects due to defective finishes have been reduced by a margin of at least 10 per cent where the automatic spray equipment was consistently used for an appreciable length of time. Labor requirements were approximately the same as could be expected in conventional electrostatic finishing operations where a single coating station was utilized, but in several instances both labor and power costs were reduced by sizeable margins by using a single power pack to energize electrodes and related facilities at two or more coating stations.

For further information on any product mentioned in this issue—use the READER SERVICE CARDS between the covers.

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These photographs of SCHMIEG finishing equipment recently installed in the ultra-modern plant of a large manufacturer of kitchen equipment and other metal specialty items.

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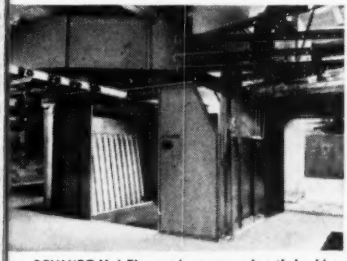

SCHMIEG Uni-Flow prime spray booth looking into booth from operator's side. Door in foreground is closed during operation of the booth.

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Why SCHMIEG Finishing Systems give best performance per dollar invested.

It's no secret that design experience and engineering skill have put SCHMIEG out in front, where careful planning and reasons of economy are most necessary for specific plant installations.

SCHMIEG Uni-Flow SPRAY BOOTHS offer important advantages in space saving and operating economy.

SCHMIEG Industrial OVENS are recommended by engineers who know, for hundreds of uses that save dollars in plant operations.

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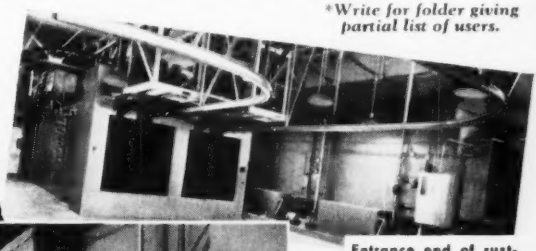
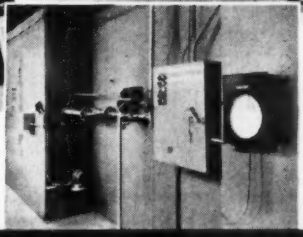


Entrance end of rust-proofing machine. Exit end of prime and finish ovens. Note pusher conveyors to convey work through ovens.

General view of SCHMIEG Uni-Flow spray booth at exit ends.



External view of Dry-off oven. Direct fired heating equipment and circulating fans are located in offset section of oven. All controls are in panel in foreground.

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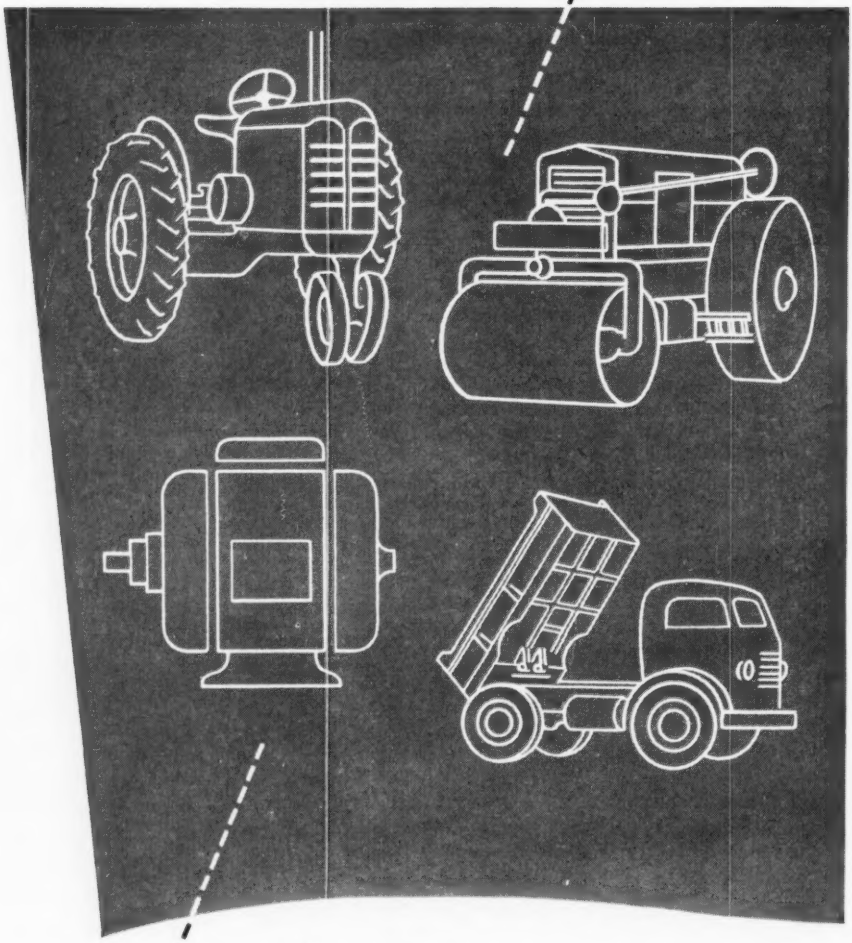

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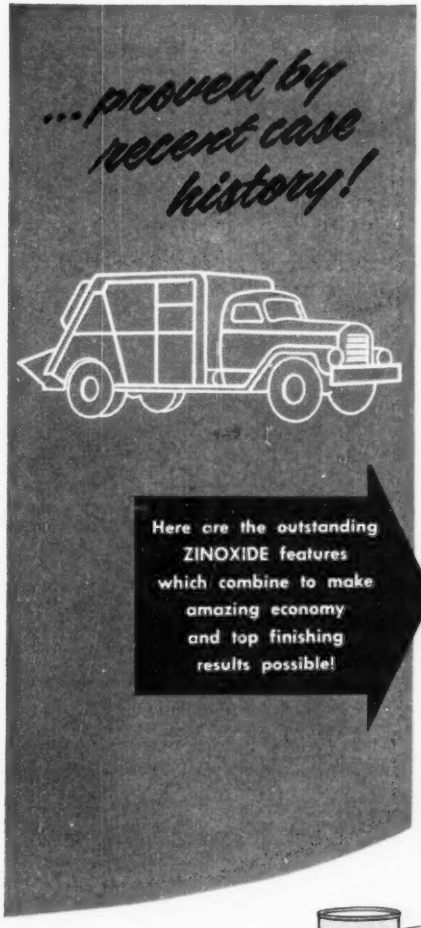
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This advertisement is based on facts from Lowe Brothers industrial case history files.

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Spotlighting FINISHING Progress

Evaluating Surface Cleanliness

By DR. ALLEN G. GRAY

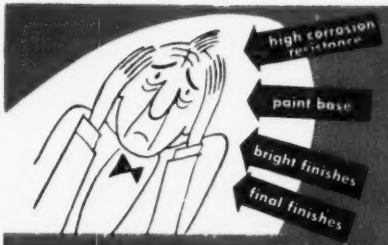
METAL surfaces must have a satisfactory degree of cleanliness prior to the various finishing operations if the finish is to be applied and used successfully. Finishing processes, such as painting and lacquering, electroplating, vitreous enameling, or coating with rust preventives, have surface cleanliness requirements. Recent investigations have been conducted on tests for measuring the degree of cleanliness of a metal surface. Such tests can assist in determining the suitability of the cleaner and cleaning cycle for the job. Cleanliness evaluation tests are also valuable in studying cleaner efficiency.

Methods for testing cleaned metal for cleanliness and surface activity, prior to painting, have been investigated by an ASTM committee[1] under the chairmanship of Thomas Rice, Rock Island Arsenal. As a part of studies to establish standards of cleanliness for metallic surfaces prior to electroplating, American Electroplaters' Society research project No. 12, under the direction of Dr. Henry B. Linford, Columbia University, has investigated test methods for determining the degree of surface cleanliness.

The ASTM Group recognized in prescribing methods for cleaning panels prior to painting without having a standard available for a clean and uniform surface. As a result, work was car-

[1] ASTM Bulletin (Dec. 1951).

A Monthly Digest of Current Technical Progress Indicating Significant Trends and Developments in the Finishing Industry



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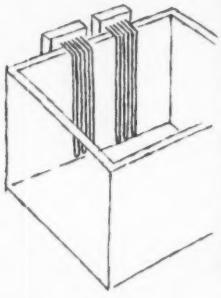

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ried out to evaluate various methods for testing the cleanliness of metal surfaces. The first of these studies considered the use of surface activity tests as a standard for determining the cleanliness of steel panels.

Surface Activity Methods

Elm's modification of the Mears[2] activity test was used in tests reported by H. A. Nelson, New Jersey Zinc Company. This modification used a solution of 32 ml. of hydrogen peroxide (30 per cent) in one liter of distilled water. Single drops of this solution were placed on the selected areas by means of a medicine dropper and the time required for first appearance of corrosion spots was noted. Twelve drops were distributed on the surface of each panel; proper adjustment of illumination was worked out for accurate detection of rust spots.

Tests of a similar nature were made using a 2 per cent hydrogen peroxide solution containing 0.008 per cent sodium chloride. Tests on cleaned and soiled panels were also made by another group to evaluate surface activity tests in cleanliness measurements. Panels which had been cleaned, then dipped in naphtha solutions containing 0.01, 0.1 and 0.5 per cent oil by volume, and dried horizontally in order to leave an oil film on the surface were tested by both modifications of the Mears test. Activity tests did not detect differences between clean, unsoiled panels and the soiled panels. On panels cleaned and treated with phosphoric acid, in accordance with ASTM Method B of D 609-50T, activity tests were appreciably higher. In discussing the results of the surface activity tests, Thomas Rice, chairman of the ASTM investigating group, pointed out that such a test is not satisfactory as a standard test for meas-

to page 64 →

[2] Trans. Faraday Soc., Vol. 31, Part 1, p. 257 (1935).

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OPERATION:	Finishing.
RESULTS:	3 fewer passes required to arrive at a given finish (8 passes required before, only 5 needed now). Belts last longer, glaze less. Customer saves time and money, keeps quality high.

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uring the cleanliness of steel panels, but might be useful in judging the effect of phosphoric acid.

Cleanliness Tests

The best known test is probably the dip test, whereby the panel is immersed in distilled water and quickly withdrawn for examination for non-wetted areas, known as water-breaks. Clean panels should show 100 per cent wetted areas or zero per cent water break. Evaluation of this test method in the ASTM studies showed that panels soiled by the 0.01 per cent oil solution could not be distinguished from the clean panels. A modification of the water-break test, namely, the spray water-break test[3] appeared to be more difficult to perform than the dip test and seemed to offer no advantages. The method based on fluorescence of oils under ultraviolet light[4] was evaluated and found not to be sensitive to the 0.1 per cent oil soiled panels.

The Rock Island Drop test was investigated and comparisons made with preceding tests. This test is carried out as follows: a 10-ml. burette is placed 12 inches above the test panel. A drop of distilled water (approximately 0.05 ml. volume) is dropped on the panel, and its diameter measured. On clean panels the drop flattens out in an almost perfect circle, with a scalloped edge, but on slightly oily surfaces the drops are smaller in diameter, usually without the scalloped edge. On very oily surfaces the drops are not round. Diameters may be measured in inches of millimeters, although the latter is preferable. This test is capable of distinguishing between the 0.01 per cent oil surface and the clean surface.

[3] Ind. Eng. Chem., Anal. Ed., Vol. 18, No. 3, p. 201 (Mar. 1946).

[4] Ind. Eng. Chem., Vol. 34, p. 1158 (Oct. 1942).

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PHILLIPS PRODUCTION DEGREASING BULLETIN

PRODUCTION LINE DEGREASER SAVES OVER 50 MAN-HOURS PER DAY!

Steger Products Builds Phillips Monorail Conveyor Type Unit Right Into Production Line

Steger Products Manufacturing Company saw the need for integrating fast, efficient degreasing with their complete production line. So in place of hand dipping in liquid solvent, (a slow, costly degreasing process) they now use a fast, efficient Phillips monorail conveyor type degreaser. All parts for the various products produced enter the degreaser on three separate monorail conveyor lines and emerge completely cleaned *without being handled by any worker*. Steger estimates that this automatic degreasing saves over 50 man-hours per day over the old method. Without this production degreaser the whole line would be slowed to the tempo of out-moded cleaning methods.

As a consequence many more units of each part are degreased in a day's time—completely—automatically. And the parts are thoroughly clean and ready for the next operation in the production line.

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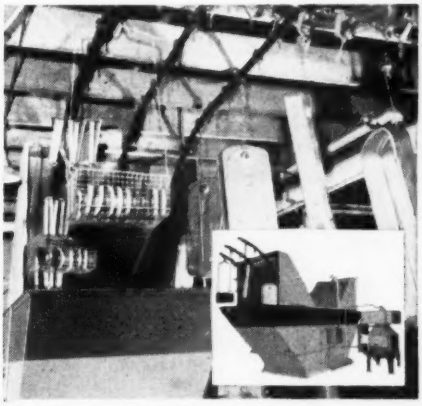

Parts emerge from degreaser on three separate conveyor lines ready for the next operation. Inset shows degreaser complete with solvent recovery still.

New Illustrated Degreaser Bulletin Offered

Phillips Manufacturing Co. offers its newly published degreaser catalog to any one who wishes to obtain a copy. It describes the full line of Phillips degreasers and shows many various and interesting industrial applications. Write Phillips Manufacturing Co., 3457 West Touhy Avenue, Chicago 45, Illinois.

(Advertisement)

Table I

READINGS OBTAINED IN CONTACT ANGLE CLEANLINESS TESTS

DEGREES OF SOIL % SAE 20 OIL IN NAPHTHA	AVERAGE CONTACT ANGLE, DEGREES
Clean	61
0.005	63
0.01	66
0.1	74
0.5	78

Contact Angle Test

The contact angle test was investigated as a method for testing steel panels for cleanliness. Panels cleaned by the solvent spray method were soiled by dipping in naphtha solvent containing 0.5, 0.1, 0.01, and 0.005 per cent SAE 20 oil. The results indicated that the contact angle method might detect oil on panels soiled with the 0.01 per cent oil solution and would definitely detect oil on panels soiled with the 0.1 per cent oil solution as indicated by the readings in Table I.

The contact angle apparatus described by Langmuir and Shaefer[5] was modified in the ASTM tests as shown in Fig. 1 and 2. With this apparatus, the contact angle or angle of incidence between a panel surface and a drop of water can be determined by measuring the angle of a beam of light reflected from the drop. Referring to Figures 1 and 2, it can be seen that the contact angle apparatus consists essentially of a base P, a protractor E, a flashlight B mounted on a pivoted right-angle strip C, and a hypodermic syringe and needle K. The syringe K is held in position by the clamps H and J extending from the post G. A utility clamp may also be used to hold the lower part of the syringe as shown in Fig. 2. The needle of the syringe K must be parallel to a line drawn vertically through the 90-degree graduation of the protractor E, and also midway between the peephole H and center of the flashlight G. The clearance cut L, in the horizontal arm of strip C, permits C to be pivoted to the 90-degree position without interference by the syringe K.

Test Procedure for Contact Angle Method

The procedure used in evaluating cleaned and intentionally soiled panels was as follows: With the tip of the hypodermic needle 5 mm. above the panel surface, a drop of water (approximately 0.01 ml.) is dropped on the panel by gentle pressure on the plunger. The test is performed preferably in a semidark room. When the flashlight is turned on, the starlike reflection from the drop is noted through the peephole with the angle of the L-strip between 70 and 90 degrees. Keeping this reflection in view, the metal strip is moved toward a more acute angle until the reflection disappears. The angle at which the reflection disappears is then read from the protractor, the angle between the vertical and the hairline being the contact angle.

Performance Results

Rice reported that work on comparison of the Rock Island Arsenal drop test, the contact angle method, and the modified Mears activity test gave evidence to further substantiate the usefulness of the drop test and the

[5] J. Am. Chem. Soc., Vol. 59, p. 2405 (1937).

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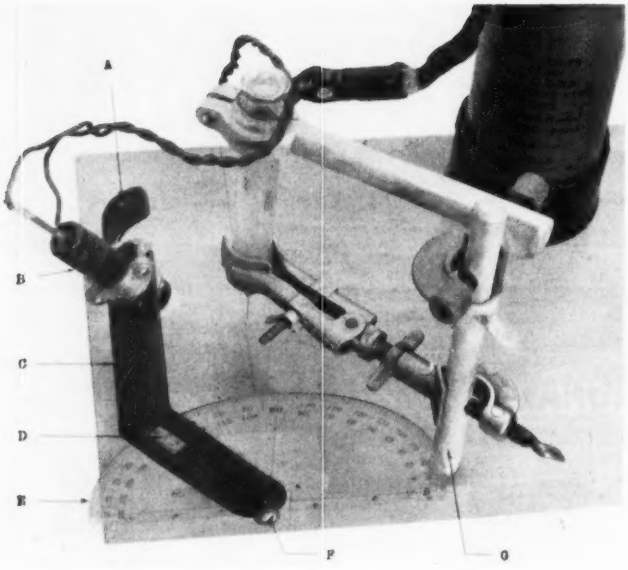

Fig. 1—Apparatus for measuring contact angles in metal cleanliness tests. A—Peephole for eye, horizontal part right angle strip. B—Flashlight. C—Right angle strip. D—Window w/ pointer in vertical part of right angle strip. E — Protractor. F—Rd. hd. wood screw w/washer and coiled tension spring. G—Steel Post. *(Photo courtesy A.S.T.M.)*

contact angle procedure as methods of testing the cleanliness of steel panels. Panels were cleaned by a solvent spray method, with and without subsequent treatment in 1:1 phosphoric acid solution, and by trichlorethylene vapor degreasing, with and without subsequent treatment in 1:1 phosphoric acid solution. However, these panels were soiled by a different procedure than used in the preceding tests. The panels were laid on a rack in a horizontal plane and the soiling solution was

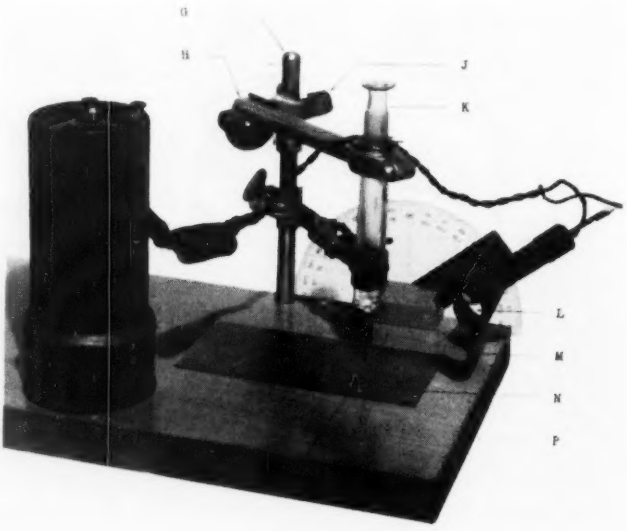

Fig. 2—Apparatus for measuring contact angles in metal cleanliness tests. G—Steel Post. H—Clamp arm for holding syringe. J—Two way clamp. K — Hypodermic syringe w/needle. L—Clearance cut for Hypo. syringe. M —Wood block for mounting right angle strip. N — Steel test panel in position. P —Wood base, approximately 9 inches wide by 12 inches by 1 inch thick. *(Photo courtesy A.S.T.M.)*

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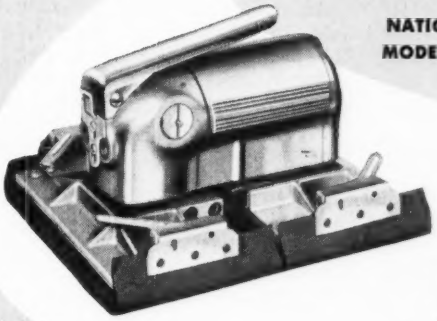

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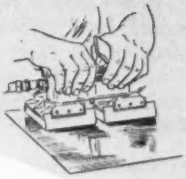

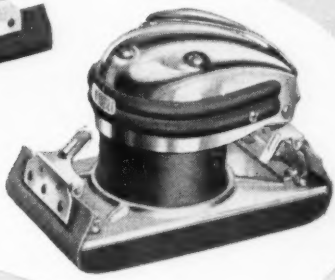

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flowed on the panel with a 1-ml. pipette. The soil solution consisted of redistilled naphtha containing 0.00005, 0.0001, 0.00025, and 0.0005 ml. of oil per ml. or naphtha.

The tests showed that both the contact angle method and the Rock Island Arsenal drop test would definitely detect 0.0001 ml. of oil per 100 sq.cm. of surface. It is possible that the contact angle would detect 0.00005 ml. of oil per sq.cm. of surface. The modified Mears surface activity tests did not distinguish between clean panels and the soiled panels.

Water Break Test for Cleanliness Prior to Plating

The water-break test is probably the most widely used method in use today for examination of cleaned parts prior to plating. It is based on the ability of a metal surface, when supposedly clean, to sustain an unbroken film of water. In discussing this method of surface cleanliness evaluation,[6] Dr. Henry B. Linford, Director, A.E.S. Research Project No. 12 on Cleaning and Preparation of Metals for Electroplating, pointed out that objection to this test has been made on the ground that preferential adsorption of material presenting a hydrophilic surface could cause a dirty film to sustain a water film. However, this can be avoided by adding a 3-5 per cent (by wt.) sulfuric acid dip and a water rinse following the original water rinse. This additional step is necessary especially when wetting agents are used in the cleaner.

Another drawback is that the pattern obtained is a function of the thickness of the water film. Smaller and smaller areas sustaining a complete water film are obtained as the water drains from the panel. As these areas begin to reach a more or less constant size, evaporation of the water becomes a factor in obscuring the results. Objects which show no break in a cold rinse will sometimes do so in a hot rinse. Thin films of oxides, tarnish, and cleaner residues will not cause water-break.

The spray pattern method[3] is basically a modification of the water-break test. In this method a fine spray of water is directed at the panel from a distance of two feet by means of an atomizer connected to a compressed air line. The pattern of water droplets on the panel is observed and is reproduced by eye on cross-section paper ruled into 100 squares. The number of squares not covered by droplets is counted and the figure obtained is the "cleaning index" which should range in value from zero to 100. Cleaning index values so obtained are useful primarily for comparing performance ratings of good cleaners. If the cleaner is poor, it is not likely that water-break will be absent anywhere on the panel surface. The index value would

to page 74→

[6] A.E.S. Research Report No. 18, American Electroplaters' Society.

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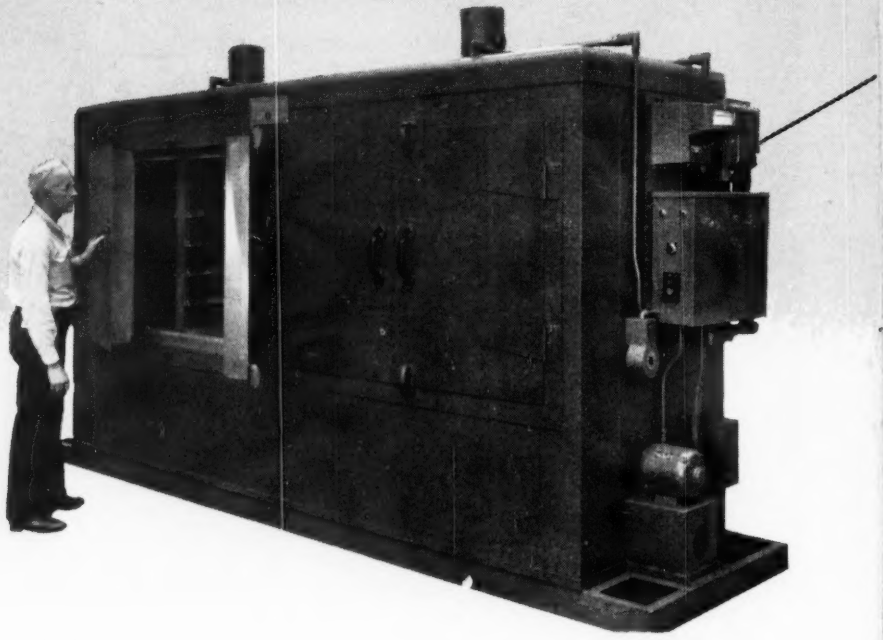

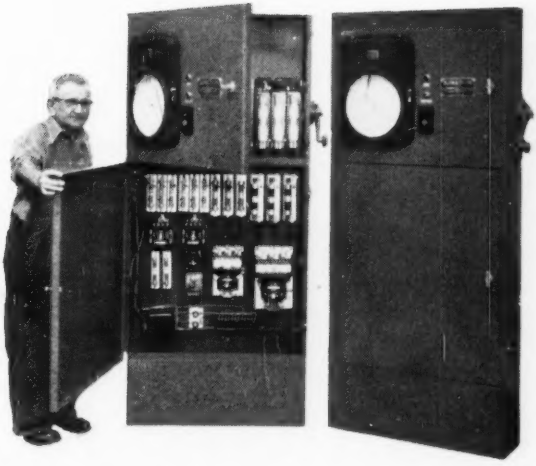

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be zero for such a cleaner. Thus, it can be seen that the spray pattern test will give numerical evaluation where the water-break test shows absence of water-break somewhere on the panel surface, but will tell nothing more than the water-break test when there is complete water-break.

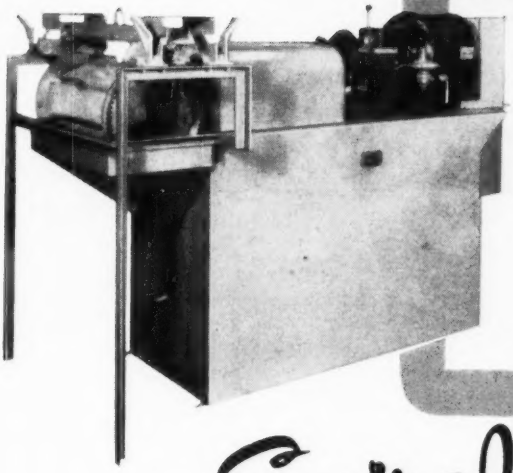
Other Plating Cleanliness Tests

The A.E.S. research project looked into tests other than wettability tests as a means for measuring surface cleanliness prior to plating. Gravimetric tests, whereby residual soil is removed by a solvent and weighed, were found not to be sensitive enough for the evaluation of good cleaners, and for poor cleaners the results showed poor reproducibility. The fluorescent dye method[4] was reported to be quite sensitive and ideally suited for testing a series of samples in which one factor, say percentage of wetting agent, is varied in a given cleaner. However, for isolated tests, the method is qualitative only, because absolute brightness of the plate is not determined in the method. Also, it is questionable whether the test will indicate the amount of oil present or merely its surface distribution.

The radioactive tracer method[7] has been criticized on the basis that the tracer segregates on standing and that preferential adsorption of the tracer takes place. In addition, the size of the panel is limited by the opening of the Geiger counter, thus making it difficult to apply such standard tests as water-break, and so forth.

A copper plating test is sometimes used to evaluate cleaner efficiency. The steel test panel is immersed into a simple copper salt solution such as a 5 per cent (by wt.) copper sulfate solution or a solution of 5 per cent (by wt.) copper sulfate and 5 per cent (by wt.) sulfuric acid. Galvanic replacement takes place with copper replac-

[7] A.S.T.M. Bulletin *158*, 49 (1949).



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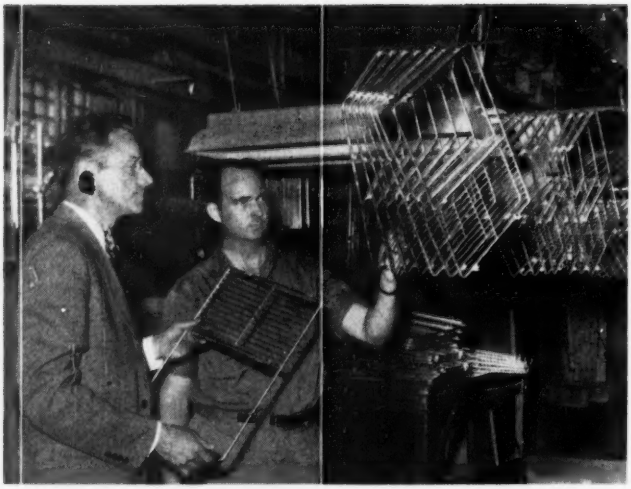


Fig. 3—Steel refrigerator shelving electrocleaned in Oakite bath before zinc plating at plant of McCormick Bros., Albany, Indiana. (*Photo courtesy Oakite Products, Inc., New York 6, N. Y.*)

ing iron on all clean surfaces. A quantitative comparison of cleaners has been made by determining the time required to clean panels as indicated by this method. One drawback of this test is that the test solution is bound to exert some cleaning action on oxide or smut covered parts without affecting greasy spots. Thus a failure in the copper plating test would indicate that degreasing was incomplete; success of the test would not necessarily mean that the sample would have plated well, as there might be oxides and smut present which were removed during the course of the test.

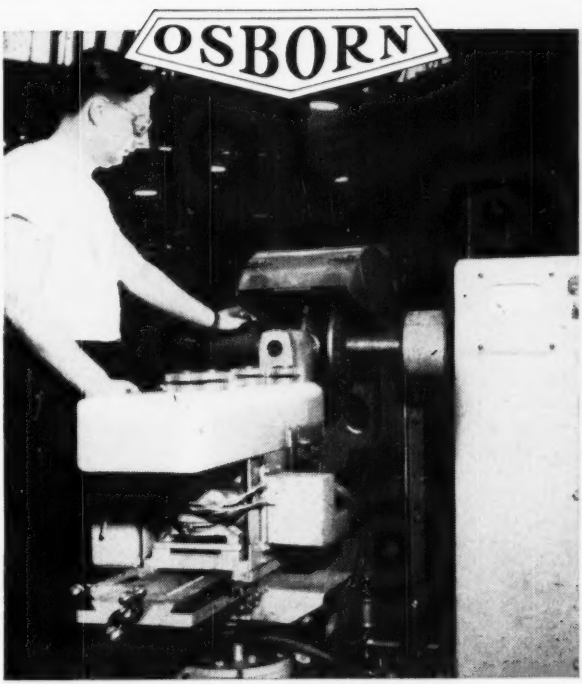
An important point stressed by Dr. Linford was that the examination of electrodeposits is indispensable in setting up standards of cleanliness prior to plating. Four important criteria to be examined include adhesion of deposits, gross porosity of deposits, corrosion resistance of plated metals, and microstructure of the deposit and the basis metal. A number of standard tests may be used to evaluate these performance characteristics of plated parts. Figure 3 shows steel refrigerator shelving that has been electrocleaned before zinc plating.

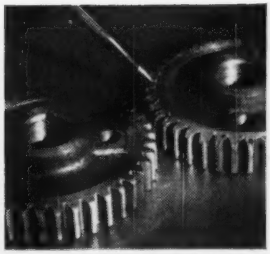
●

The Atomizer Test

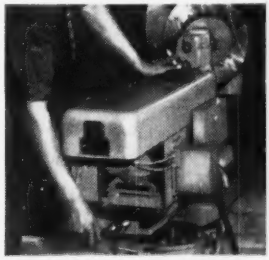
A new cleanliness evaluation test based on wettability was developed in the A.E.S. cleaning studies. According to Dr. Linford, there were three main reasons why wettability was selected as the basis for the development of a new test method. Such tests are simple to conduct, inexpensive to set up, and highly sensitive. Concerning sensitivity it has frequently been shown that one molecular layer of a water repellant material can be detected. Thus, wettability is probably unrivalled in sensitivity by any other readily detectable chemical or physical property.

The new test, termed the "atomizer test," is related to the water-break and spray pattern test. The spray pattern test renders the water-break test capable of quantitative interpretation; in this test, the panel undergoing the water-break test is subjected to a fine spray of water from an atomizer nozzle after ½-1 minute has elapsed following removal of the panel from the rinsing bath. Areas wetted at the commencement of spraying remain wetted. Areas dry at the commencement of spraying become covered with small water globules. Thus, the soiled areas may be measured. The atomizer test differs from the spray pattern test in that panels are dried completely be-





RESULTS ARE UNIFORM. Burrs and sharp edges are removed uniformly. Every gear has smooth, uniform, rounded edges. Surfaces are blended. These gears were deburred on the machine shown at the left.



SET-UP IS SIMPLE. The machine is highly adaptable where production involves either large runs of a few parts or small runs of many different types and sizes of gears. Machine setups may be quickly made by unskilled operators. The complete brushing cycle is controlled automatically by the electronic timer which is set for any desired brushing interval to suit the size, shape or condition of part being brushed.

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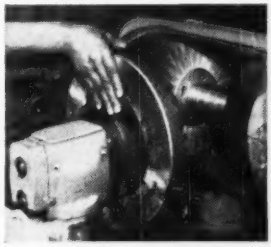

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fore spraying. This difference in technique appears to be important.

How to Conduct the Test

The equipment used in the atomizer test corresponds to that used in the spray test pattern. All that is required is a supply of clean compressed air and an atomizer. The air pressure found most suitable is 9 to 10 p.s.i. The atomizer used in the A.E.S. studies was a DeVilbiss No. 251 bulb atomizer of 15 ml. capacity. The bulb is removed and the atomizer is connected to the compressed air line. The air enters a 5-gal. carboy half filled with distilled water and then goes to a tube filled with glass wool, and to an empty 2/3-gal. bottle which acts as a surge vessel. The air then goes to a glass tee which leads to the manometer and to the atomizer. The solution used in the atomizer is a 0.1 per cent (by wt.) solution of dye in distilled water.

Figure 4 shows the shape of the test

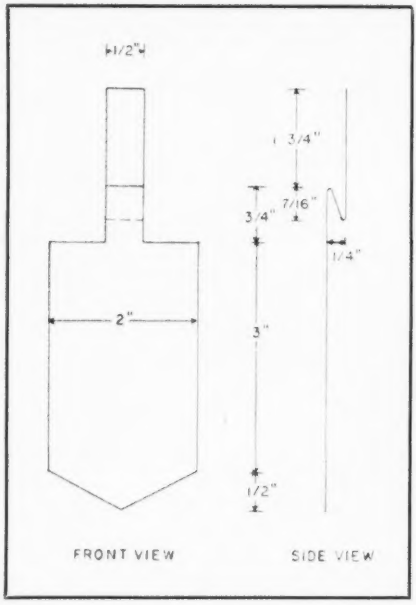

Fig. 4—Shape of metal panel used in A.E.S. cleanliness evaluation tests.
(Illustration courtesy American Electroplaters' Society)

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panels used in the cleanliness evaluation studies. The addition of the triangular bottom section permits elimination of irregularities in results of cleaning tests due to the drop which collects at the tip of the panel during drainage. The tongue at the top allows clamping outside the bath. Cleaning results were evaluated for the central 2 by 3 inch section of the panel. In evaluating the atomizer test, panels were soiled intentionally by several means to study cleaner efficiency.

After the panels have been cleaned and are ready for testing they are hung in a vertical position in air at room temperature and are allowed to dry completely. When the rectangular central portion of the panel is ready for testing, the sprayer is placed at a distance of 2 feet from the panels and

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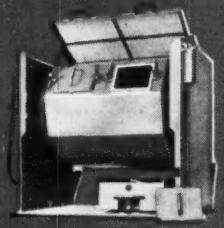

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spraying is begun. Three panels were tested simultaneously in the A.E.S. research studies. Spraying is continued until the pattern has developed, which takes about 30-45 seconds. About 10 ml. of solution are used during the spraying operation.

As soon as the spraying of the panel has been completed the panels are dried by heat from a No. 2 Photoflood lamp placed about 1 foot away. This freezes the pattern for permanent recording, staining the panel with blue dye wherever water globules were present. Where uniform water films were present, the dye is too diluted to leave much stain upon drying. It is advantageous to make a permanent record of the cleaning results. In the A.E.S. tests a pantograph was used to magnify the patterns (2X) and record them on paper. Areas which had evidence of water globules were recorded as dirty, and those which had no dye specks were recorded as clean. Comparison of results obtained by measuring soiled areas from the panels, directly, with those obtained by measuring those areas on patterns reproduced with the pantograph showed no inaccuracies arising from the use of the pantograph.

* * *

Plating on Aluminum Alloys

OF the different methods available for plating on aluminum the zinc immersion method has been tentatively accepted by A.S.T.M. Committee B-8 on Electrodeposited Metallic Coatings as the most satisfactory and practical for plating substantially all of the different aluminum alloys with various other metals. Electroplating of these alloys is considered to be commercially practical and economically sound. The tentative recommended practice (A.S.T.M. designation: B 253-51T—issued 1951) has been accepted as a

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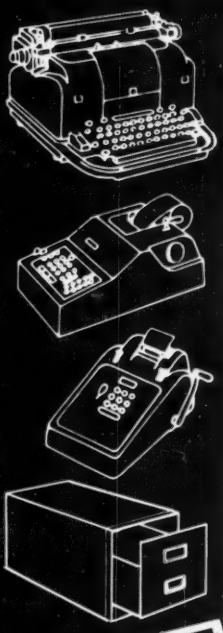

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guide for plating on aluminum alloys.

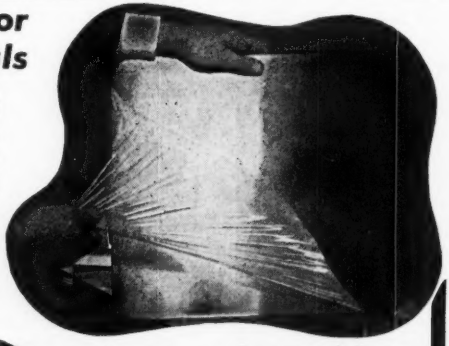
According to the A.S.T.M. recommended practice, to obtain consistent results with the zinc immersion method for plating on aluminum alloys, it is essential that the various cleaning and conditioning treatments provide a surface of uniform activity for the deposition of the immersion zinc layer. The surface must be free of any oil, grease or other foreign matter. For removing oil or grease, vapor degreasing or solvent cleaning may be necessary. A mild etching-type alkaline cleaner is also recommended. A solution consisting of 3 oz./gal. each of sodium carbonate and trisodium phosphate, used at a temperature of 140-180 deg. F., for 1 to 3 minutes has been found satisfactory.

After cleaning, further treatment of the surface is generally required to remove the oxide film and microconstituents. Treatment in 50 per cent nitric acid is sometimes sufficient. An effective solution for removing microconstituents consists of 15 per cent (by volume) sulfuric acid used at 180 deg. F. for 2 to 5 minutes. For casting alloys containing silicon, a short dip in a solution containing 3 parts (by volume) of concentrated nitric acid plus 1 part (by volume) of 48 per cent hydrofluoric acid was recommended.

For the zinc immersion step, a room temperature solution consisting of 70 oz./gal. of commercial sodium hydroxide and 13 oz./gal. of zinc oxide was recommended. The immersion time should be from 30 seconds to 1 minute. Ordinarily, it is advisable to apply a suitable copper strike over the zinc immersion layer before other metals are deposited. A Rochelle-type copper strike solution of the following composition has given good results: 5.5 oz./gal. copper cyanide; 6.5 oz./gal. total sodium cyanide; 4.0 oz./gal. sodium carbonate; 8.0 oz./gal. Rochelle salts; and 0.5 oz./gal. free sodium cy-

A Strippable Plastic for the Protection of Metals

Striplastic is a protective plastic applied by spraying, dipping or rolling. It is used on stainless steels, high polished metal sheets, sheets in cold working or drawing, tools, dies and parts, and on sheets or metal parts before packaging. It protects against scratching and abrasion, and against rust. Also available as a booth coat protection.

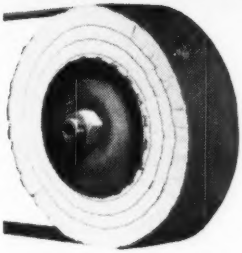


THE STRIPLASTIC COMPANY

Among many advantages, it is nontoxic, possesses great tensile strength and is easily stripped off in one piece. Write for complete information on this new strippable plastic.

10828 QUEBEC AVE.
CLEVELAND 6, OHIO

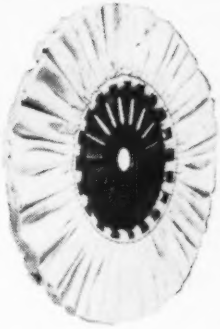
A FEW OF THE MANY FORMAX PRODUCTS



STYLE C-20 CONTACT WHEELS

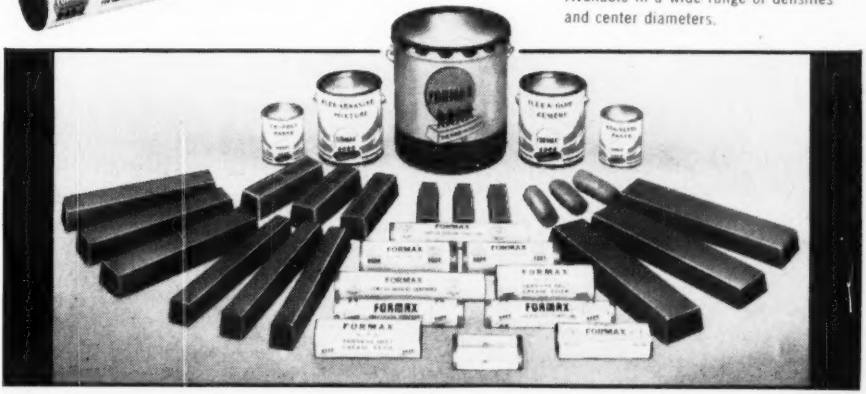
and F-26 Belt Lubricant

A C-20 flexible Contact Wheel will form itself to the shape of the work and permit the abrasive felt to polish contoured surfaces and F-26 Abrasive Belt Lubricant will increase belt life by preventing loading and glazing. Produces finer, smoother and brighter surfaces through lubrication.



ZIPPO BUFFS

These famous long-wearing buffs run cool under all buffing conditions. Constructed of high count bias-cut cloth or sisal mounted on safe steel centers. Available in a wide range of densities and center diameters.



A complete line of buffing compounds in bar form as well as in liquid form for brush or spray application. Also Flex-A-Glu polishing wheel cements.

Our Laboratory and Sales Engineering staff would welcome the opportunity to be of help in solving your finishing problems.

Send for descriptive literature

FORMAX MFG. CORP.

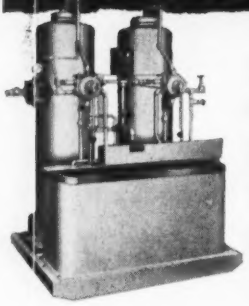
DETROIT 7, MICHIGAN

"THE FOUR McALEERS"

MANUFACTURED IN CANADA BY JOHN GALLOWAY LTD., KITCHENER, ONT.

For PURE Water

INDUSTRIAL
WATER DEMINERALIZERS



Mill Room Water
Nickel Dip Solutions
Neutralizer Solutions

Cost analyses are proving that the use of raw water in metal coating processes is not so cheap after all. This is especially true when mineral-free water can be obtained for a matter of cents per 1000 gallons in any quality with an INDUSTRIAL water demineralizer.

The operation is very simple. Raw water is passed through alternate beds of ion-exchange resins, and it comes out free of all mineral salts. No steam, heat, still, or cooling water is needed—keeping space requirements at a minimum.

It's simple to get the complete facts for your case. Send us a water analysis and let us know how much water you have to treat and the gallons per hour needed. We can then give you the whole demineralizer story including estimated costs, equipment required, performance data, etc., for your requirements.

★ ***Write for recommendations***

INDUSTRIAL FILTER & PUMP MFG. CO.

5904 Ogden Ave., Chicago 50, Illinois

anide (max.). The strike solution is generally used at 100 to 130 deg. F. with a pH of 10.2 to 10.5. Electrical contact should be made before the article is immersed in the bath and a fairly high cathode current density (24 amp./sq. ft.) should be used to get rapid coverage. After this strike, the work can be transferred to other standard plating baths. In some cases, other metals may be deposited directly on the zinc immersion layer, provided the plating procedures are suitable for plating over zinc.

When the programs for further increases of production of nickel now under way in Canada, Cuba and elsewhere are realized, the total annual nickel production in the free world will be roughly 375,000,000 pounds, an increase of over 150,000,000 pounds, or more than 65 per cent, above the annual production of the pre-war years.

FUNCTIONAL FINISHES!!

If you require your coatings to accomplish some specific task — something beyond mere ornamental appearance or average longevity —

Try Us!

We make ACRYLIC, ALKYD, CELLULOSIC and VINYLOID coatings for a very wide range of specialized industrial applications.

The Varnish Products Co.

5204 Harvard Avenue
Cleveland, Ohio

The sparkle on that silver is born in the plating bath, and it's the FIRST and ONLY *really bright* silver plating process. Coverage! H-VW-M's Silver-Lume Process produces a consistently uniform high color through an exceptionally wide current density range. Even deeply recessed pieces like the bowl of a gravy ladle come out of the bath uniformly bright. There's no need for special equipment to plate with Silver-Lume, initial cost is low, savings in buffing costs are considerable —and the whole process is easily controlled, foolproof and time-saving with *consistently* better results.

This exclusive process is just one of many results of over eighty years of constant electroplating development—a continuing policy summed up in H-VW-M Platemanship . . . your working guarantee of the best that industry has to offer—not only in the bright plating of silver—but in every phase of plating and polishing.

9463

Ask for the Technical Instruction Manual on Silver-Lume.

Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

HANSON-VAN WINKLE-MUNNING CO., MATAWAN, N. J.
PLANTS AT MATAWAN, N. J. • ANDERSON, INDIANA
SALES OFFICES ANDERSON • BOSTON • CHICAGO • CLEVELAND DAYTON • DETROIT • GRAND RAPIDS • MATAWAN • MILWAUKEE NEW HAVEN • NEW YORK • PHILADELPHIA • PITTSBURGH ROCHESTER • SPRINGFIELD (MASS.) • STRATFORD (CONN.) • UTICA

H·VW·M

INDUSTRY'S WORKSHOP FOR THE FINEST IN PLATING AND POLISHING PROCESSES • EQUIPMENT • SUPPLIES

PRACTICAL APPLICATIONS of Modern Products

Gun Barrel Degreaser Speeds "De-Mothballing"

ESPECIALLY designed for rapid and economical removal of heavy grease and similar protective coatings, a Gun Barrel Degreaser manufactured by Currier Company, 710-73rd Ave., Oakland 4, Calif., is currently in use at a West Coast naval depot to "de-mothball" various types of rifles, machine guns and heavy calibre gun barrels.

The portable unit uses non-inflammable trichlorethylene vapor as the degreasing agent. Hot vapor is automatically forced through the gun barrel, leaving it chemically clean in a matter of minutes. Removed grease or compound, together with the condensed vapor, drains to a closed container. The trichlorethylene solvent is later recovered for re-use by a simple distillation process, and the residue of removed grease is run into containers for convenient disposal.

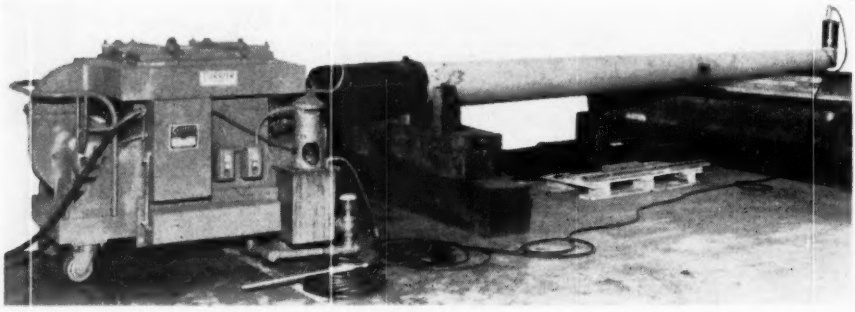
Cleanliness and ease of operation, speed of removal, low operating costs, portability and elimination of fire hazard are the principal advantages claimed for the unit.

Oven Bakes 22,000 Parts in Eight Hours

A far-infrared oven recently installed at the Foxboro Co., Foxboro, Mass., makers of industrial instruments for process, bakes paint on 22,000 separate meter parts in an eight-hour shift. All colors of paint are baked at about the same speed using these far infrared heaters, with no slow-up to accommodate light colors.

The lightweight ovens consist of

This Currier Gun Barrel Degreaser is used to "de-mothball" various types of rifles, machine guns and heavy calibre gun barrels.



metalwash

- WASHING MACHINES
- PICKLING MACHINES
- QUENCH TANKS

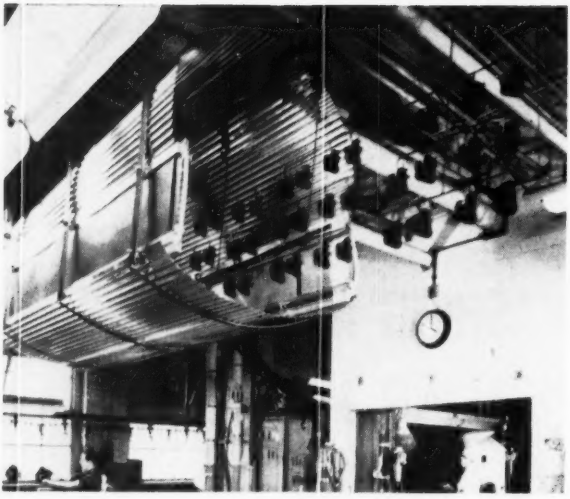
metalwash

We are proud to announce publication
of METALWASH FINISHING ENGINEER,
a quarterly magazine addressed to executives and engineers
to whom new methods and new materials for finishing
are subjects of daily concern.

Please write us if you would like to receive
FINISHING ENGINEER regularly, starting with
the first issue, October, 1952.

metalwash MACHINERY CORPORATION
915 North Avenue • Elizabeth 4, New Jersey

REPRESENTATIVES IN PRINCIPAL CITIES



View of the overhead infrared bake oven in which 22,000 meter parts, of all colors, are baked in an eight-hour shift.

only four aluminum Chromalox radiant heaters and reflective aluminum sheeting, and is conveniently located overhead to save valuable floor space. Since the radiant heat is directed and reflected into the work rather than convected around it, it has not been necessary to close the ends of the oven. Total installed capacity of the oven, made by the Edwin L. Weigand Co., 7552 Thomas Boulevard, Pittsburgh 8, Pennsylvania, is 14.4 Kw. on a 230-volt line.

A flexible conveyor system operating at a speed of 4½ f.p.m., permits easy handling of both large and small parts. The small items are hung on frames with three tiers, while larger ones are attached directly to the main conveyor hooks.

Economy in Descaling of Shell Rings

A considerable reduction in the cost of descaling rings for 20 mm shells for a large producer of these parts occurred as a result of tests carried out by the Magnus Chemical Company of Garwood, New Jersey.

Formerly the rings had been sent to a job shop for descaling and brightening at a cost of about $0.04 per ring. The Magnus method now enables the manufacturer to do the operation in his own shop at a cost of less than $0.01 per ring.

The method consists of using D-Scale-RS in a hot water solution at a concentration of 8 ounces per gallon in a tumbling barrel without stones or other abrasives. The Magnus compound, an inhibited acid cleaner, safe for use on copper alloys without danger of tarnishing or corroding, gave complete satisfactory descaling and a bright copper color in about 15 minutes.

The operation has been on a routine basis for some time now. Rings are descaled in batches of 150 pounds, and each batch is run for 15 minutes at 40 r.p.m. The same solution is good for three successive batches, after which it is discarded.

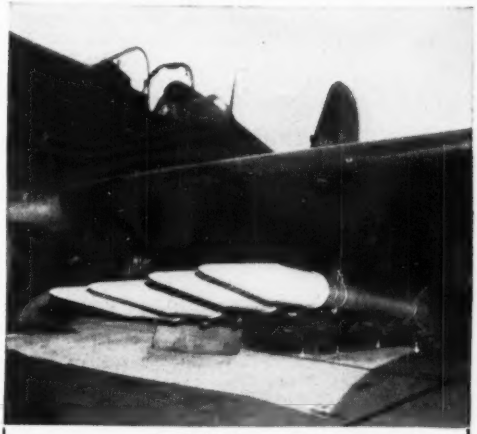
For further information on any product mentioned in this issue—use the READER SERVICE CARDS between the covers.

AMERICAN CHEMICAL PAINT COMPANY
AMBLER CHEMICALS ACP PROCESSES PENNA.

Technical Service Data Sheet
Subject: IMPROVING PAINT ADHESION ON STEEL WITH GRANODINE®

INTRODUCTION:

"Granodine" is a zinc phosphate coating chemical which improves paint adhesion on steel, iron and zinc surfaces. In the easily applied Granodizing process, a non-metallic crystalline coating is formed on the treated metal. This bond holds and protects the paint finish and thus preserves the metal underneath. Parts can be either Spray Granodized in an industrial power washing machine, Dip Granodized in tanks, or Brush Granodized with hand equipment.



Official Dept. of Defense Photograph

An F4U Corsair with the Navy's new aircraft anti-tank rocket, the "RAM". A Grade I zinc phosphate finish (JAN-C-490) protects the entire external surface of this rocket and provides a durable bond for the specification paint finish.

"GRANODINE" MEETS SERVICE SPECIFICATIONS:

The protective "Granodine" finish meets Grade I of JAN-C-490 and equivalent requirements of:

JAN-F-495 U.S.A. 57-0-2C, Type II, Class C U.S.A. 51-70-1, Finish 22.02, Class C.

MANY APPLICATIONS:

Automobile bodies and sheet metal parts, refrigerators, washing machines, cabinets, etc.; projectiles, rockets, bombs, tanks, trucks, jeeps, containers for small arms, cartridge tanks, 5-gallon gasoline containers, vehicular sheet metal, steel drums and, in general, products constructed of cold-rolled steel in large and continuous production are typical of the many products whose paint finish is protected by "Granodine" zinc phosphate coating.

CHEMICALS ACP PROCESSES

WRITE FOR FURTHER INFORMATION ON "GRANODINE" AND YOUR OWN METAL PROTECTION PROBLEMS.

CHEMICALS ACP PROCESSES

NEWS of the Industry

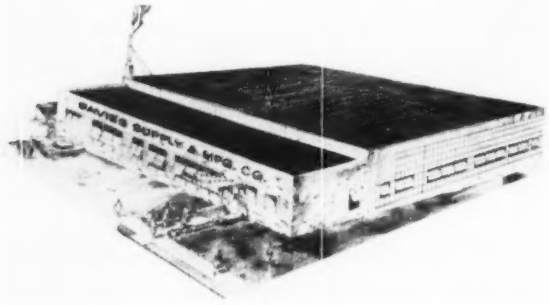
NEW PLANTS

Announcement has been made by Clinton F. Robinson, president of The Carborundum Company, Niagara Falls, New York of a new plant for the production of zirconium and hafnium sponge metals to be built by **THE CARBORUNDUM METALS COMPANY, INC.,** a recently formed subsidiary of The Carborundum Company. The plant will be located in the Town of Newstead on an 18½ acre plot.

The Carborundum Metals Company, Inc., was created for the purpose of supplying zirconium and hafnium to the Atomic Energy Commission and ground is expected to be broken for the new plant within the near future.

THE DAVIES SUPPLY AND MANUFACTURING COMPANY, southwestern supplier of industrial plating and polishing equipment and materials has moved into an ultra-modern new home especially designed and constructed for the Davies firm at 4160 Meramec Street, St. Louis 16, Missouri.

Besides the general offices, the new structure contains over twice as much warehouse and shop space as Davies' former quarters. L. A. Davies, president, states that the extra warehousing space will permit even better service on the numerous nationally-known lines of plating and polishing equipment.



New plant of Davies Supply and Manufacturing Co.

COMPANIES

Du PONT COMPANY recently observer their 150th anniversary with ceremonies at the site of the company's first mill on Brandywine Creek.

An audience of nearly 7,000 people, du Pont employees and members of the du Pont family, attended. Employees were selected to represent each of du Pont's 71 plants and many of its laboratories and sales offices. Thousands of men and women connected with the company's plant, laboratories and sales offices across the nation held their own celebrations and heard the program over a radio broadcast.

Included in the Wilmington program was an historical dramatic prologue depicting the company's founding, after which, Henry B. du Pont, great-great grandson of the founder and a vice president and member of the du Pont executive committee, spoke. He was followed by Crawford H. Greenwalt, president and Walter S. Carpenter, Jr., chairman of the board of directors.

THE ELECTRIC PRODUCTS COMPANY of Cleveland, Ohio, has appointed Robert A. Young & Company as sales and service representative for Southern California and the State of Arizona.

With offices in Glendale, California, the company will handle all the industrial lines of The Electric Products Company —electrolytic motor-generators, general purpose motor-generators, frequency changers, a.c. and d.c. motors, and a.c. and d.c. generators.

BEDE INDUSTRIAL PRODUCTS, INC. 1110 Brookpark Road, Cleveland 9, Ohio announces the appointment of the following jobbers and distributors:

The Payton Company, 6733 N. Olmsted Avenue, Chicago 31, Illinois, for Chicago and surrounding counties.

Mid-States Industrial Corporation, 2401 Eleventh Street, Rockford, Illinois, for Rockford and adjacent territory.

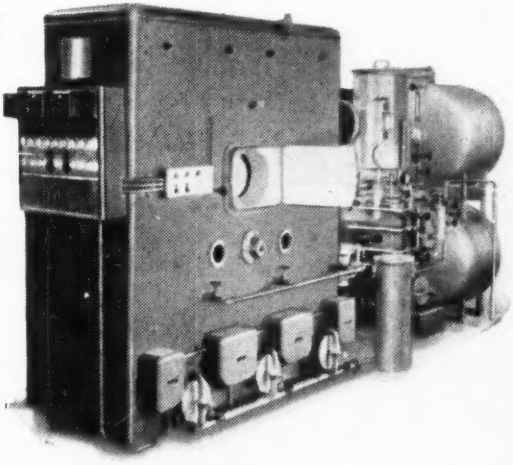
Finishing Equipment & Compressor Co., 1705 Grand Avenue, Kansas City, Missouri, for Western Missouri, Kansas and Eastern Colorado.

William D. Burke, 3972 Main Street, Riverside, California for Pacific Coast States of California, Oregon and Washington. Mr. Burke, as a factory distributor, will maintain sales and service and establish jobbers in the three states.

THE LEA MANUFACTURING CO., Waterbury 20, Conn., announces the formation of a wholly owned subsidiary known as Lea Mfg. Co. of Michigan, Inc., formed for the express purpose of manufacturing and marketing Gripmaster polishing wheel cement. Lea Mfg. Co. of Michigan, Inc. has purchased the patent rights, trademark rights and goodwill of Gripmaster from the Nelson Chemicals Co., Detroit, Michigan.

Fully Automatic Degreasing Plants

Furnished in all sizes, to use trichlorethylene, perchlorethylene, or any other solvent . . . with a maximum of efficiency and economy.



Technochemie, Ltd.

ZURICH, SWITZERLAND

A factory expert is available for consultation.

Write for further details to:

These and many other Swiss plants are now in use all over Europe as well as in the United States.

EQUIPMENT EXPORT CO., 521 FIFTH AVE., NEW YORK 17, N. Y.

For the time being LEA will manufacture and sell Gripmaster on the premises of Nelson Chemicals Co., 12345 Schaefer Highway, Detroit, Mich., observing the same high standards of manufacture and control. A new plant in Detroit is under construction which will house LEA and Gripmaster.

Announcement is made by Frederick G. Weed, president of the **RINSHED-MASON COMPANY**, Detroit, Michigan, manufacturer of automotive and industrial finishes, of the purchase of the 54 year old **STANDARD PAINT AND VARNISH COMPANY, LTD.**, of Windsor, Ontario. The Standard trade name, known throughout Canada, will be maintained, and the newly acquired company will be headed by Frederick G. Weed, president; Joseph H. Parson, secretary; and George Monteith, treasurer.

The **J. J. SIEFEN CO.**, 5645 Lauderdale, Detroit 9, Mich., announces the appointment of Len Pravel, Inc., 6121 Woodlawn, Chicago 37, Ill., as exclusive distributors in Wisconsin and Illinois for their polishing and buffing products.

Len Pravel, Inc. is owned and operated by Leonard E. Pravel, who has acted as representative for various companies in the finishing line for several years.

MAAS & WALDSTEIN CO., 438 Riverside Ave., Newark, New Jersey, are pleased to announce the approval of their synthetic finish, DURAD Moisture and Fungus Resistant Varnish Y-608, under Type I and Type II of Military Specification MIL-V-173.

R. Lee Hundley, President of the **R. L. HUNDLEY CO.**, announces that due to increased business volume, the firm will move to larger quarters at 1937 W. Fond du Lac Avenue, Milwaukee 5, Wisconsin. The R. L. Hundley Company is direct factory representative in Wisconsin and Minnesota for the pressure-cooled buffs and aircon contact wheels manufactured by United Buff Products Corporation, Passiac, New Jersey.

use

Electro-Glo

ELECTRO-POLISHING CONCENTRATES

SAVE TIME . . . SAVE LABOR . . . INCREASE PRODUCTION

SMOOTHS . . . BRIGHTENS . . . DEBURRS

Removal of metal can be controlled down to .0002 of an inch.

COPPER ALLOYS	ELECTRO-GLO #200
AUSTENITIC STAINLESS STEEL	ELECTRO-GLO #300
MARTENSITIC STAINLESS STEEL	ELECTRO-GLO #400
CARBON STEEL	ELECTRO-GLO #500

WRITE FOR COMPLETE DETAILS

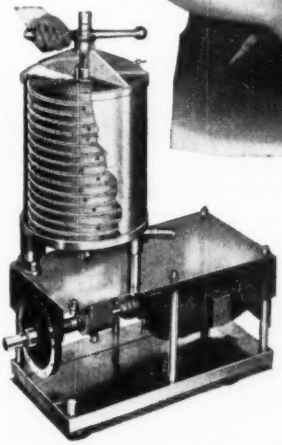
Electro-Glo COMPANY • 1432 SO. TALMAN AVE. • CHICAGO 8, ILL.

DISTRIBUTED BY

WAGNER BROTHERS, INC.
400 Midland Ave., Detroit 3, Mich.

BAKER DISTRIBUTING COMPANY
1105 W. 11th St., Cleveland 13, Ohio

guard against Rejects



"Sealed Disc" Filters were designed especially for plating rooms. They're smaller, compact, and more portable than ordinary conventional Filters, and they are also performing satisfactory results on many acid dips, electro cleaners, and solvents.

You Can Be Sure With A "Sealed Disc" Filter

More and more cost-minded platers depend on Alsop "Sealed Disc" Filters to remove dirt, dust, and sludge from their plating solutions. They get better finished plated work—they save time and labor, and their plating solutions last longer. The "Sealed Disc" Filter assures positive, trouble-free performance that's proof against even the invisible impurities that cause nodules and porousness—proof against rejects and reworking. There's a "Sealed Disc" Filter "to fit your job"—write for complete information, the Alsop Engineering Corporation, 710 Keen Street, Milldale, Connecticut.

ALSOP ENGINEERING CORPORATION

Filters, Filter Discs, Pumps, Tanks, Mixers, Agitators

LASALCO, INC., 2818-28 LaSalle Street, St. Louis, Mo., has appointed the Kaynide Division of the Kraft Chemical, Company, 917 West 18th Street, Chicago, Ill. as their exclusive Chicago sales distributors of Lasalco plating equipment.

The Kaynide Division will distribute the Spiral Dryer which was recently exhibited at the Industrial Finishing Exposition, in addition to the complete line of Lasalco semi and full automatic plating conveyors, barrel plating machines and their Circular Chrome Plater.

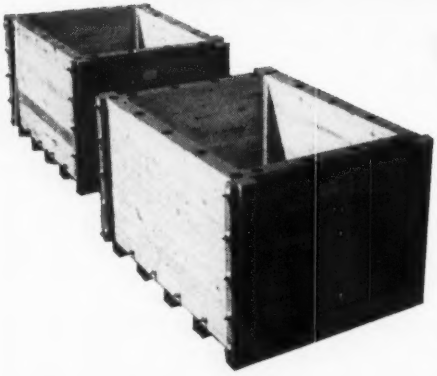
The formation of **CROWN CHEMICAL AND ENGINEERING CO.**, 5649 Alhambra Avenue, Los Angeles 32, Calif., has been announced. Offering a complete line of chemicals, metal finishing equipment and supplies, and engineering services, the company contracts to design, furnish equipment and chemicals, and do all installation, plumbing, electrical, and ventilation work required in connection with metal finishing facilities.

Principals of the new company include: Jack Beall, president; Tom Turner, vice president-treasurer; and Hal Wells, vice president-secretary. Beall, a registered chemical engineer, was graduated from Penn. State, and has been manager of the Metal Finishing Division of A. J. Lynch & Company for the past six years. Turner received his formal training at U.C.L.A. and has been with A. J. Lynch & Company for fifteen years where he was secretary and manager of the chemical division. Wells is a chemical engineer from the University of Denver.

PESCO PLATING EQUIPMENT CORP. has announced the removal of its office to 75 Wythe Avenue, Brooklyn 11, New York. Counter service is also available at this location. This move is for the business office only, as the firm is still maintaining its store and showroom at 182 Grand Street, New York 13, N. Y.

PLANET PLATING CO., INC., 494 Morgan Ave., Brooklyn, 22, New York has recently moved into its new and larger quarters, and has added to its capacity to serve its clients. The company specializes in electro-forming in copper, nickel and other metal and specification silver and gold plating.

YOU SPECIFY 'EM ...WE'LL BUILD 'EM



PLATING and PICKLING WOOD TANKS

Don't compromise . . . don't accept plating and pickling tanks that are "approximately" what you need. Get *exactly* what you want from Kalamazoo!

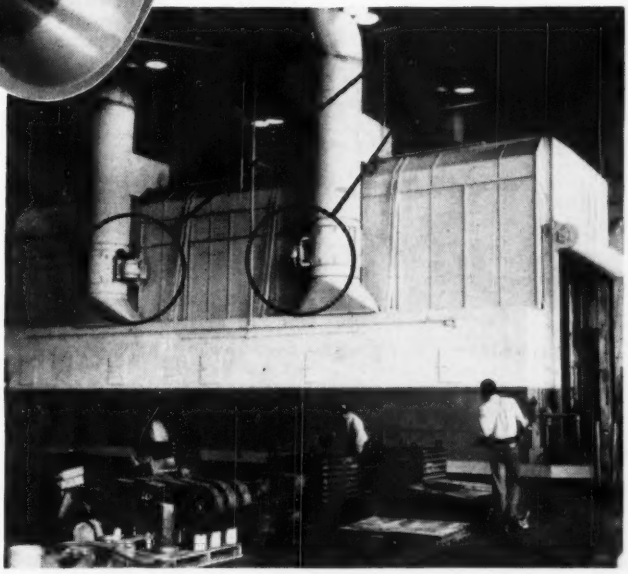
Yes . . . we'll build it for you and do it at lowest possible cost. Users throughout the metal finishing industry know they can depend on Kalamazoo for standard or special size tanks . . . whether made from fir, oak, cypress or redwood.

Don't settle for less. Investigate what Kalamazoo offers you. Write for estimates and suggestions.

Kalamazoo TANK and SILO COMPANY

WOOD TANK DIVISION
1028 HARRISON STREET
KALAMAZOO, MICHIGAN

Thorough Paint Spray Exhaust by 2 Duct-Size "Buffalo" VANEAXIAL FANS



This Mahon Hydro-Filter Spray Booth in the Euclid Road Machinery Company's Cleveland plant accommodates large units of road building machinery and special vehicles. And two duct-size "Buffalo" Vaneaxial Fans do the exhaust job efficiently, quietly and with little attention. Fitting in like a piece of duct, these fans waste no space and are economical to install. Motors in these models are mounted outside, away from the air stream.

There is a "Buffalo" Fan ready to solve *your* problem. Why not write today for details?

"Buffalo" FIRST FOR FANS

BUFFALO FORGE COMPANY

190 Mortimer St. BUFFALO, NEW YORK

PUBLISHERS OF "FAN ENGINEERING" HANDBOOK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

Sales Representatives in all Principal Cities

DIAMOND JUBILEE 75th ANNIVERSARY

FORCED DRAFT PRESSURE BLOWING HEATING COOLING
VENTILATING AIR CLEANING AIR TEMPERING INDUCED DRAFT EXHAUSTING

Announcement has been made that **SIPI METALS CORP.**, has become the new name for Silverstein & Pinsof, Inc., well-known Chicago smelters and refiners. The change heralds a new period of growth and expansion in products and services by the same people who have served the industry faithfully and creatively in the past.

The Sipi Metals Corp. produces a complete range of quality controlled non-ferrous alloys, including brass, bronze, aluminum, lead, tin, solder, anodes, babbitt, zinc base alloys, copper and nickel alloys.

NEW POSITIONS

B. L. HATHORNE has joined the staff of Glyco Products Co., Inc., in the capacity of assistant to the vice president in charge of development.

Mr. Hathorne is a graduate of the Lowell Textile Institute and he has an extensive background in the chemical industry. He recently resigned as manager of the auxiliary products division of the Geigy Co.

In his new capacity Mr. Hathorne will devote his time to Glyco's expanding activities, with particular emphasis in the development of new products.

The promotion of **L. CAMEL** to the position of divisional general sales manager of the Industrial Chemical Division and **D. E. WILLIARD** to divisional general sales manager of the Industrial Equipment Division was announced by W. F. Newbery, director of sales for the Detrex Corporation. .

Mr. Camel will direct the sale and service of the chemical division products which include: cleaners, strippers and spray booth compounds; phosphate coating; and the silicone coating removal processes.

Mr. Williard will control the sale and service of the Detrex line of solvent degreasing machines and solvents, and the mechanical washers used in industrial production cleaning.

The Lowe Brothers Company, paint and varnish makers, Dayton, Ohio, have appointed **STEPHEN SESNICK** as industrial sales representative in the New Jersey and lower New York state area.

Stephen Sesnick

Mr. Sesnick, a graduate of City College of New York, has been actively engaged in the industrial finishing field for over seven years in the capacity of formulator and sales service representative.

His wide experience and training in the use of proper industrial finishes and methods of applications will enable him to provide competent assistance to Lowe Brothers industrial accounts throughout the eastern market.

Appointment of **DONALD R. GUTHRIE**, as executive engineer in charge of engineering research was announced by Minnesota Mining & Manufacturing Co.

C. P. Pesek, vice president in charge of engineering and properties, said Mr. Guthrie will organize an engineering research group consisting of three sections: chemical engineering, machine development and instrument engineering.

Mr. Guthrie received has degree in chemical engineering from the University of Iowa in 1938, and joined 3M as a research chemist in 1939.

D. E. Williard at left and L. Camel, right, developing new sales and service plans with W. F. Newbery, director of sales at Detrex.

HARSHAW Fluoborate plating chemicals

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LEAD FLUOBORATE

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HARSHAW

THE HARSHAW CHEMICAL CO.
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BRANCHES IN PRINCIPAL CITIES

Select the nearest Harshaw Branch

Clifford R. Palkie

CLIFFORD R. PALKIE, well-known in the field of protective coatings, has joined the staff of United Chromium, Inc., New York 17, N. Y., as assistant sales manager of its Organic Coatings Division. Mr. Palkie's immediate assignment is the supervision of sales of vinyl chlorinated rubber and phenolic coatings in the line of Ucilon Protective Coatings.

Prior to joining United Chromium, Mr. Palkie was with Corrosite Corporation for six years, the last two of which were spent as assistant sales manager.

William Hogenson, president, Chicago Vitreous Enamel Product Co., Cicero, Illinois has announced the appointment of **ALBERT B. FRIEDMANN** as Assistant to the vice president of sales.

Mr. Friedmann, who has been advertising manager of the company since January, 1946 attended the University of Chicago and Northwestern University, majoring in advertising and business administration. He saw Army service during World War II, originally in the Cavalry and later as a Quartermaster officer.

Hooker Electrochemical Company announces the appointment of **HORACE W. HOOKER, JR.**, as assistant to the general sales manager, **PETER N. MACLAREN** as purchasing agent and **ROBERT F. SCHULTZ** as assistant technical superintendent.

Mr. Hooker has been associated with the company since 1934, when he was employed in the development and research department. He was graduated from Cornell University in 1928 and is a member of the Chemist's Club of New York.

Mr. Maclaren attended Bishop's College, York, England and worked with the Taylor Engineering Company and the Royal Bank of Canada before coming with Hooker. He has been with the company since 1936.

Mr. Schultz came to Hooker in 1941 following graduate work in chemical engineering at the University of North Dakota. He served as a chemical engineer in the process study group until 1945 when he became technical foreman of the fine chemicals department.

Announcement has been made that **CHARLES P. CULP**, assistant manager of trade sales of the du Pont Company's finishes division, Wilmington 98, Delaware since 1945, has been appointed Atlanta regional sales manager of the division, with headquarters in Atlanta, Georgia. Mr. Culp succeeds **WILLIAM T. BANNING**, who is retiring on October 31 after 37 years with the du Pont Company. Until then Mr. Banning will serve in an advisory capacity.

Other appointments in the finishes division organization include: **DONALD V. BAUDER**, assistant manager of sales development, to succeed Mr. Culp; **LAWRENCE M. DAVIS**, paint store superintendent, to succeed Mr. Bauder; and **ROBERT J. NAST**, assistant paint store superintendent, to succeed Mr. Davis as paint store superintendent.

William R. Barrett

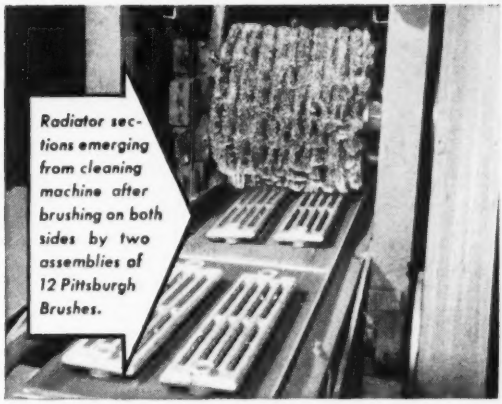
Frederick G. Weed, president of the Rinshed-Mason Company, Detroit, Michigan, has just announced executive changes elevating **WILLIAM R. BARRETT** to vice-president and general manager of the Detroit plant. He was recently vice-president in charge of sales.

Mr. Barrett, is a graduate chemical engineer of Michigan State College and joined R-M in 1947.

Lyle E. Frohberg will succeed Barrett as general sales manager, and William L. Vyn steps up to sales manager of the industrial finishes division.

Assignments for four cellulose products department district sales managers have been announced by Hercules Powder

Pittsburgh Brushes help you solve problems like these!



Radiator sections emerging from cleaning machine after brushing on both sides by two assemblies of 12 Pittsburgh Brushes.

Cleaning Narrow Spaces — National Radiator Company, Johnstown, Pa., cleans 30,000 radiator sections a week! To insure a perfect final finish, even the narrowest spaces must be absolutely clean prior to assembly. Pittsburgh engineers were presented with the problem of designing a brush that would reach these spaces and would fit National's existing machine. Successful? National reports: Pittsburgh Brushes "do a better job of cleaning and are more economical."

Preparing Chills — At Continental Foundry & Machine Co., East Chicago, Indiana, chills used to cast iron rolls must be cleaned of the oxidized metal remaining from previous usage, as well as dirt and grease accumulated in storage. After experimenting with other brushes, Continental settled on Pittsburgh Brushes because they "do the job better and stand up longer than others previously used."

Improving Original Equipment — The Sommer and Maca Glass Machinery Co., Chicago, Illinois, uses Pittsburgh Brushes in the automatic washing machines they manufacture. Brushes formerly used simply didn't have the over-all density pattern needed. Pittsburgh engineers studied the problem and designed a brush which Sommer and Maca approved "because of denser bristle pattern and lower cost."

WRITE TODAY FOR FREE BOOKLET!

Write for a free copy of our booklet that shows, through actual case histories, how Pittsburgh can help *cut your* brushing costs. Address: PITTSBURGH PLATE GLASS COMPANY, *Brush Div.*, Dept. W-8, 3221 Frederick Ave., Baltimore 29, Maryland.

PITTSBURGH *Power Driven* **BRUSHES**

BRUSHES • PAINTS • GLASS • CHEMICALS • PLASTICS

PITTSBURGH PLATE GLASS COMPANY

Left to right: Howard S. Lawton, James R. Yeager, Henry P. Grace and Philip F. Robb.

Company. The assignments are: **JAMES R. YEAGER**, manager lacquer promotion, Wilmington; **PHILIP F. ROBB**, district sales manager, New York City; **HENRY P. GRACE**, district sales manager, Detroit; and **HOWARD S. LAWTON**, district sales manager, Cincinnati.

Mr. Robb, who has been district sales manager in Detroit since 1936, is a prominent member of the Society of Plastic Engineers, and has served as national secretary and treasurer of that organization. He also served as an executive of the Detroit section of the National Paint, Varnish and Lacquer Association.

Mr. Grace, who has been manager of the Cincinnati territory for the past five years, joined Hercules in 1940. A member of the American Chemical Society and the Society of Plastics Engineers, Mr. Grace has been concerned with the application of cellulose products in lacquers, plastics, and detergents.

Mr. Lawton, the new manager of the Cincinnati sales district, has had experience both in the manufacturing and technical sales of cellulose derivatives. He recently worked with contractors on government defense projects, particularly on the use of hot-spray lacquer.

Mr. Yeager has had almost thirty years experience with all phases of the manufacture and sales of nitrocellulose and other cellulose derivatives for lacquer. For the past two years, he has been manager of Cellulose Products' New York office. He is a member of the Chemists Club of New York City, the American Chemical Society, and the Commerical Chemical Development Association.

FRANK H. BEADLES has been named an assistant director of sales of the Du Pont Company's finishes division, it has been announced. Mr. Beadles has been manager of the division's plants technical section, for the last year. He will be responsible for direction of automotive, specialties, and export sales and transfers, and will have supervision of the sales managers involved. Mr. Beadles was graduated from Virginia Polytech-

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For other Gov't Specs., write for Specification Data Sheet

Prep-n-Cote

Multi-Purpose, Corrosion-Resisting, phosphate coating and cleaning product for mechanical cleaning systems . . . Described in Prep-n-Cote Bulletin 48-91.

Metalprep

General all-purpose Rust Remover and Metal Cleaner, available in wipe-off and dip type grades . . . Described in Metalprep Bulletins 50-34 and 50-37.

Lyfanite

Corrosion-proof Coating for Aluminum Alloys, providing thousands of hours of salt spray and humidity resistance . . . Described in Lyfanite Bulletin 49-98.

Galvaprep

Provides greater paint adhesion on Galvanized Iron, Galvanneal and other zinc-coated surfaces . . . Described in Galvaprep Bulletin 48-89.

"PREP PRODUCTS Used First... Make Your Paint - Finish Last"

Prep-pik-l

Heavy Rust and Light Scale Remover; non-corrosive on surrounding equipment . . . Described in Prep-Pik-L Bulletin 49-3.

Rust-preev

Economical process to preserve Ferrous Metals from rusting during fabrication and interim storage periods . . . Information on request.

Alumiprep

General all-purpose Metal Conditioner for Aluminum Alloys, available in wipe-off and dip grades . . . Described in Alumiprep Bulletin 50-62.

Emulsoprep

Emulsion and Alkaline Metal Cleaners, available for all types of metals and applications, dip or spray . . . Described in Emulsoprep Bulletin 50-61.

. . and General PREP Bulletin 48-60

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FLEXIBLE
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Send data on Haskins equipment for

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nic Institute in 1929 and joined Du Pont in the same year.

MILTON F. BEECHER, head of Norton Company's research and development laboratories retired recently as vice president and director and will be succeeded by **WALLACE L. HOWE,** director of research and development, Milton P. Higgins, president, announced.

Milton F. Beecher

Mr. Beecher graduated with a B. S. in ceramics from Iowa State College in 1910, and obtained the professional degree of Ceramic Engineer from the same institution in 1915. He was appointed research engineer in 1919 and director of research in 1951.

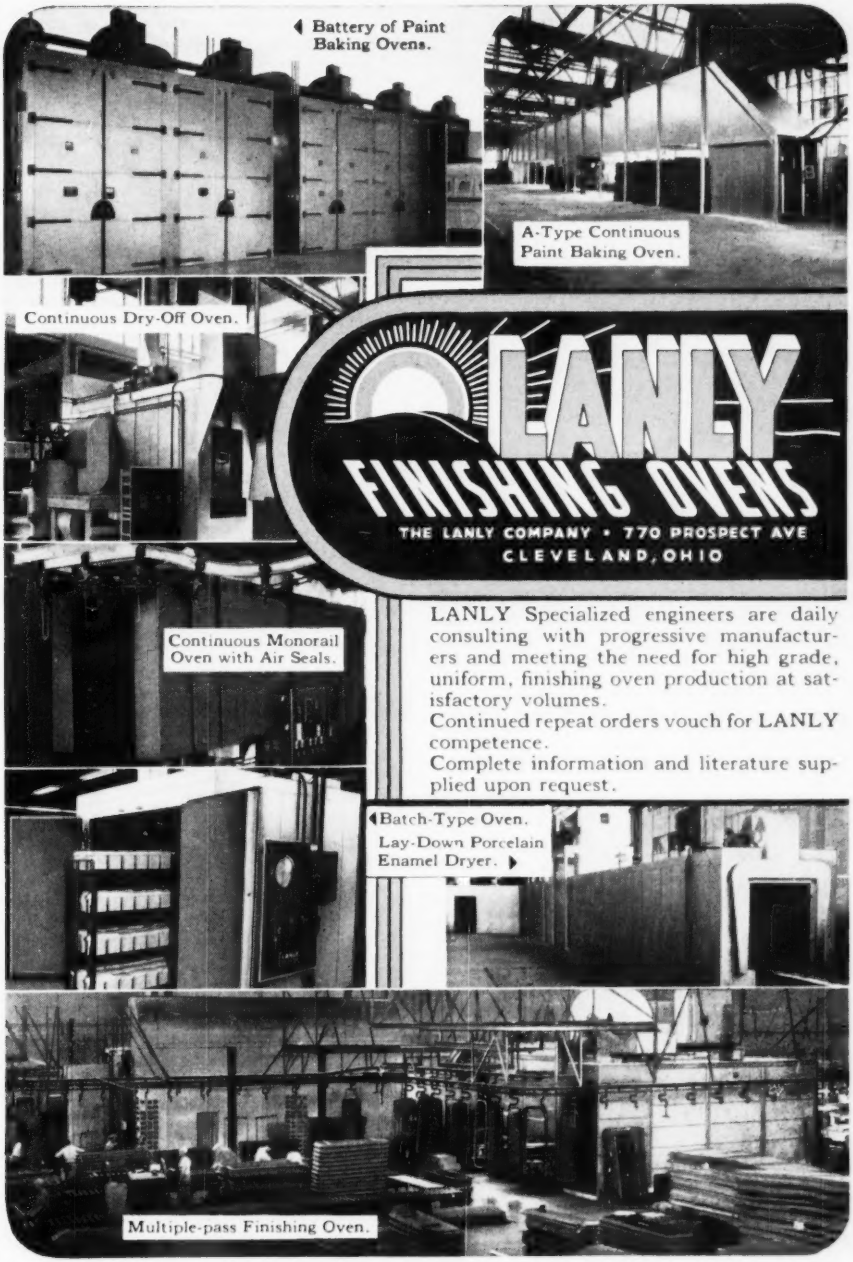
A member of the board of directors since 1946, Mr. Beecher was elected vice president in January 1950. In 1945 he was awarded the honorary degree of doctor of engineering by his alma mater, Iowa State College.

LOIUS V. GANGON has been appointed Massachusetts' sales representative for Frederick B. Stevens, Inc., Detroit 16, Michigan.

Louis V. Gagnon

Mr. Gangon will work from the company's New England Branch at New Haven, Connecticut and will represent Stevens entire line of metal finishing equipment and supplies.

Before joining Stevens Mr. Gagnon was employed as a representative of the Bart-Messing Corp. He worked his way up from plater's helper to superintendent of elec-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FINISHING OVENS
THE LANLY COMPANY • 770 PROSPECT AVE
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Continuous Monorail Oven with Air Seals.
LANLY Specialized engineers are daily consulting with progressive manufacturers and meeting the need for high grade, uniform, finishing oven production at satisfactory volumes.
Continued repeat orders vouch for LANLY competence.
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troplating and also worked six years as control chemist and buffing and polishing foreman.

Richard P. Bell

RICHARD P. BELL has been appointed assistant general paint manager for Pittsburgh Plate Glass Company's merchandising division, Joseph C. Thompson, general paint manager announced recently.

Mr. Bell joined the firm's merchandising division in 1938 and during the past six years has served as paint sales manager.

A native of Pittsburgh, Mr. Bell is a graduate of Shadyside Academy and Princeton University. He is president of the Pittsburgh Chapter, Producers' Council and treasurer of the Pittsburgh Paint, Varnish and Lacquer Association.

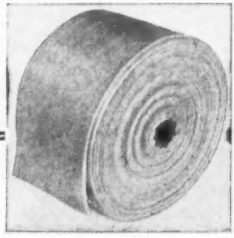
ERNEST S. KOPECKI has joined the public relations department of The Carborundum Company, Niagara Falls, N. Y., it was announced by E. Dent Lackey, Public Relations Manager.

As Assistant to the Public Relations Manager, Mr. Kopecki's responsibility will be to conduct editorial relations with the industrial trade press.

Mr. Kopecki earned his Bachelor of Science in Chemical Engineering at Marquette University, Milwaukee, and his Master's degree in Metallurgy at Carnegie Institute of Technology.

JAMES A. RABBITT, Inco consulting engineer, and an authority on Japan and the Far East, has retired from active service with The International Nickel Company, Inc., Dr. Paul D. Merica, president of the company announced.

Mr. Rabbitt, a native of Stamford, Connecticut undertook a survey of the industries of Japan after joining International Nickel in 1929. From 1932 to 1940, he was adviser and acting director of the company's Japan Nickel Information Bureau and also editor-in-chief of the Japan Nickel Review.



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CUT BULK
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NOW! Tack Cloth in Handy Rolls or Cut Bulk

Now you can get Tack Cloth packed the way it's easiest for you to use—either in 150 yard rolls of 36" wide cloth or in handy cartons—100 or more Tack Cloths to the carton.

No matter which way you buy it, you can be sure that every square inch will *stay* SOFT and TACKY until the very last bit is used up.

The Cut Bulk size is 18" x 36"—folded to 4½" x 18" for easy handling. *All of our Tack Cloth is Spontaneous Combustion-Proof, Lint-Free and Wax-Free.* It's clean and sanitary—*there's no waste.*

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Also Individually Packed in Glassine Envelopes — 144 to the Carton

— A WARRANTY OF SATISFACTION IN EVERY CARTON —

Clean METAL PARTS

FASTER!
BETTER!
CHEAPER!

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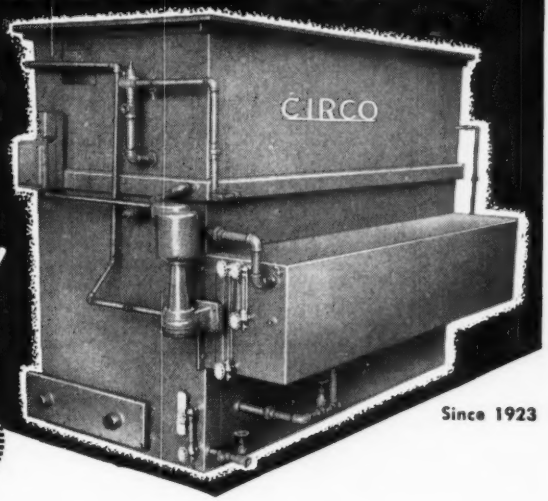

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CIRCO Vapor Degreasers are suitable for operation with either Perchlorethylene or Trichlorethylene Degreasing Solvents. CIRCO Degreasers distill and reclaim their solvent automatically. Dual vapor level control.

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CIRCO-SOLV - (Perchlorethylene)
PER-SOLV - (Trichlorethylene)

Both solvents—specifically manufactured for metal cleaning. Stabilized — non-corrosive. Best for all degreasers.

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PER-SOLV (Perchlorethylene) • CIRCO-SOLV (Trichlorethylene)
"CIRCO" VAPOR DEGREASERS • METAL PARTS WASHERS • DRYERS • SOLVENT RECOVERY STILLS

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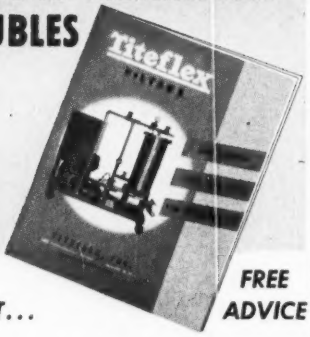

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During World War II, Mr. Rabbitt served in the United States as technical consultant on Japanese industries and in 1948 resumed his residence in Tokyo as Inco Consulting Engineer. In 1951 he founded the Nickel Metallurgical Library in Tokyo.

SOCIETIES

Carl F. Hansen, Chairman of the **CHICAGO ELECTRO-PLATERS INSTITUTE**, has announced that the Institute's $2500 reward offer to stop thefts of critical metals in the Chicago area has been extended to August 31, 1953. The reward was initiated a year ago by the Institute following a series of thirty thefts of allocated metals from shops of member firms.

During the past year, seven defendents have appeared on metal theft charges. Robert Spies, confessed burglar, has been convicted of three burglaries. Another defendent in the same case is awaiting trial.

The Institute, which represents nearly 100 job-shop metal finishing firms in the Chicago area, also announced that since the reward offer was made, only six metal thefts have been reported.

MEETINGS

Members of the Chicago Paint and Varnish Production Club who are in charge of arrangements for the Thirtieth Annual Meeting of the **FEDERATION OF PAINT AND VARNISH PRODUCTION CLUBS** which will be held at the Palmer House, November 20, 21, 22, met recently to correlate the plans of the various committees.

McKeon's

"Liquid Sulphur"

FOR COPPER STRIPPING NON-DANGEROUSLY

Economical, Non-Electrolytic.

No special equipment required.

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Sulphur Products Co., Inc.

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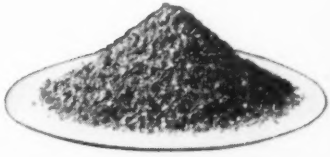
More production . . . reduced polishing costs. That's why the foreman is so well pleased with himself . . . and with the ruggedness and perfect adaptability of Simonds Abrasive Company Borolon grain . . . a real money saver on polishing jobs . . . and part of a complete line including grinding wheels of all shapes and sizes, mounted wheels and points, segments.

Bulletin ESA 198 describes Borolon grain in every type for top results on every polishing operation. Let's send it to you, together with the name of your nearest Simonds distributor. Write today.



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Division of Simonds Saw and Steel Co., Fitchburg, Mass. Other Simonds Companies: Simonds Steel Mills, Lockport, N. Y., Simonds Canada Saw Co., Ltd., Montreal, Que. and Simonds Canada Abrasive Co., Ltd., Arvida, Que.

Herm Zimmerman, chairman of the Host Committee, stated that each of the committees has worked out a carefully scheduled plan of action for the 30th Annual Meeting.

Mrs. Zimmerman, chairman of the Ladies' Entertainment Committee, presented several tentative schedules of educational and entertaining events.

The Registration Committee, headed by Bob Bruhn, announced that the registration fee will be $12.00 and will include the banquet, dance and entertainment as well as the various meetings and the Paint Industries Show.

The tentative program for the meetings session has just been completed by Howard Sholl, chairman of the Program Committee.

The opening session on Thursday will convene at 10:15 a.m. Program for the day will include the keynote address by Dr. J. S. Long; an address by the Honorable Joseph F. Battley, president of the National Paint, Varnish and Lacquer Association; a roundtable discussion on the topic Latex Paints; and a technical paper by Dr. B. L. Harris, of Johns Hopkins University.

Friday's session will feature the Mattiello Lecture by John MacGregor; a color symposium; a roundtable discussion on corrosion; the Research Program; and Club Papers. The annual meeting of the Federation is also scheduled for Friday.

A roundtable discussion on Pigment Dispersion; the unique Gimmicks and Gadgets presentation and roundtable discussion; and Club papers will complete the Saturday program.

Mr. Sholl, 1809 Bayard Street, Baltimore, Maryland, is very anxious to have the roundtable discussions begin with a bang and requests that pertinent questions be sent to him as soon as possible to assist the panels in preparing for the sessions.

William Kentner is equally anxious to hear from people having gimmicks or gadgets that they would like to present to the group at the Gimmicks and Gadgets session. Mr. Kenter also announced that the Gimmicks and Gadgets exhibit will be at the Federation booth from the beginning of the Paint Industries' Show on Tuesday until the roundtable discussion on Saturday.

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meetings OF INTEREST TO FINISHERS

Oct. 20-24. 40th National Safety Congress and Exposition, Conrad Hilton, Congress, Morrison and Sheraton Hotels, Chicago, Illinois.

Oct. 22-24. 21st Annual Meeting, Porcelain Enamel Institute, Greenbrier Hotel, White Sulphur Springs, West Virginia.

Nov. 17-19. 64th Annual Convention, National Paint, Varnish and Lacquer Association, Palmer House, Chicago, Ill.

Nov. 18-22. 17th Annual Paint Industries' Show, Palmer House, Chicago, Illinois.

Nov. 20-22. 30th Annual Meeting, Federation of Paint and Varnish Production Clubs, Palmer House, Chicago, Illinois.

NECROLOGY

CHESTER H. FISHER, 50, secretary and treasurer of Cowles Chemical Company, Cleveland, Ohio, died recently of a heart attack at his home in Brecksville, Ohio. Mr. Fisher came with Cowles in 1929, was elected treasurer in 1943 and secretary in 1952.

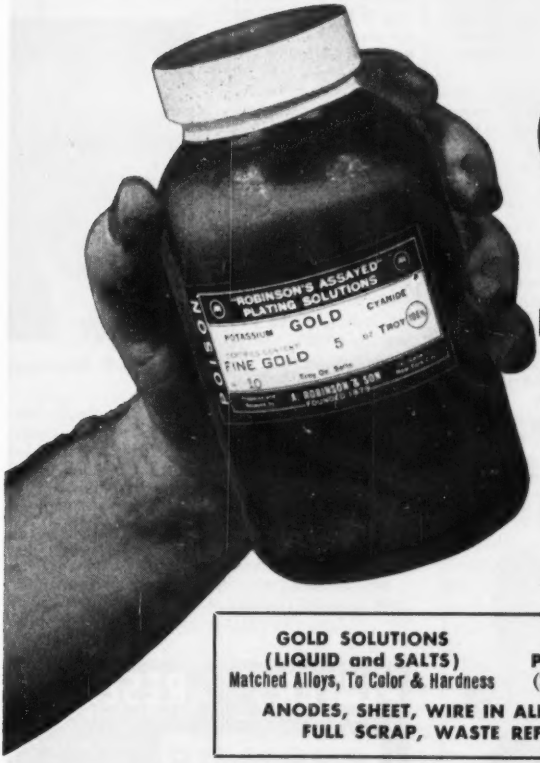
HUGH J. FRASER, vice president in general charge of all plant operations in the United States of The Interantional Nickel Company, Inc., died recently after a brief illness, in his 55th year. He resided at 45 Woodbine Avenue, Larchmont, New York.

Born in Brockville, Ontario, he graduated in 1923 from the Queen's University

ROBINSON'S *Assayed* GOLD PLATING SOLUTIONS and SALTS

PALLADIUM · RHODIUM

the OLDEST . . . *the* FINEST . . . *the* ORIGINAL



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GOLD SOLUTIONS (LIQUID and SALTS) Matched Alloys, To Color & Hardness

RHODIUM - SILVER PLATINUM - PALLADIUM (Solutions, Nitrates, Cyanides)

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Please send information on Robinson's Assayed Gold Plating Solutions ☐, Potassium Gold Cyanide ☐, Rhodium Solutions ☐, Palladium Solution ☐, Booklet: "Precious Metal Plating" ☐.
Name ..... Street .....
City ..... State .....

and joined the Huntington Works of The International Nickel Company, Inc. After serving in various technical and operating capacities before being promoted, he was elected vice president in March, 1947, and in the following June was made vice president in general charge of all plant operations. He was also an assistant vice president of the parent organization, The International Nickel Company of Canada, Limited, since June, 1943.

JAMES J. O'SHEA, vice president and sales manager of the Alsop Engineering Corporation, Milldale, Conn., recently died after a brief illness.

Mr. O'Shea, a pioneer in the field of industrial mixing and agitation, had been with the Alsop Engineering Corporation for 18 years.

He was born in New Castle, West County Limerick, Ireland, and came to the United States when he was 16 years old. During world War I he served two years in the Army and upon his return joined the Western Electric Corporation in New York. He joined Alsop Engineering Corporation in 1934 and worked in the developing of new types of chemical and industrial agitators and mixers. One of his developments was an agitator unit for the electroplating process.

He was a member of the Exchange Club, the Chamber of Commerce, and the Hartford branch of the American Electro Platers Society.

WALLACE TENNEY MONTAGUE, vice president of Norton Co., Worcester, Mass., died recently at the age of 63. A director of the Grinding Wheel Institute at the time of his death and former board chairman of both the Grinding Wheel Manufacturers Association and the Abrasive Grain Association, Mr. Montague beban working for Norton 40 years ago in the research laboratory. In 1922 he was named assistant sales manager of the Grinding Machine Division, and became its sales manager the following year.

Wallace T. Montague

From 1929 to 1932 he was assistant general sales manager for the company, after which he served as director of sales for the Abrasive Products Division until 1935. He was appointed assistant vice president in 1939, and vice president and manager of business planning and development in 1942, the position he held at the time of his death.

Mr. Montague was elected a director in 1946, and at the same time became a member of the executive committee.

Stock Delivery ON VAPOR DEGREASERS and TANKS

ANOTHER RAMCO PRODUCT

DEGREASERS
Manual and Automatic

Complete Equipment for: **Anodizing, Phosphatizing, All Plating Processes:** to comply with all gov't. specifications.

PLASTIC, WAX MELT TANKS
AGITATORS
RECTIFIERS
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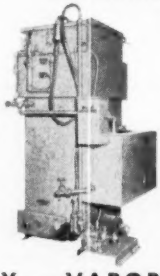

Send for literature

VAPOR — SPRAY — VAPOR

Model GU24 steam heated. Fabricated of stainless steel. Accessories: vapor level safety thermostat, water economizer, heavy duty spray pump.

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PLATERS RESEARCH

AURALITE TRADE MARK — THE ORIGINAL WATER SOLUBLE GOLD ALLOY SALT

AURALLOY PROCESS PAT PEND — OUTWEARS CONVENTIONAL GOLD PLATE OF COMPARABLE GOLD CONTENT

59 EAST 4th STREET — NEW YORK 3, N. Y.

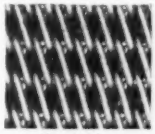
Put the FREEZE On Heat Processing Costs

with a CAMBRIDGE WOVEN WIRE CONVEYOR BELT

If your product must be heated in any way during production . . . there's a Cambridge woven wire conveyor belt to help you reduce costs by combining processing with product movement through the heating cycle.

For example, this photo shows a Cambridge Quench Tank Belt. Other belts may be used for heat processing in temperatures up to 2100° F . . . from drying ovens and baked paint finishes through annealing, hardening and brazing.

The moving belt eliminates manual handling, helps maintain product uniformity. All-metal construction gives longer belt life and lower maintenance costs. Open mesh of the belt allows free circulation of heat within the heating chamber, free drainage of solution in wet heat processing. Special side or surface attachments to hold the product during processing are available to meet your individual requirements.



Cambridge Duplex Weave

Cambridge belts can be woven from any metal or alloy, to any mesh or weave. Next time you have a conveyor belt problem, call in your Cambridge field engineer for his experienced advice. Write direct or look under "Belting-Mechanical" in your classified telephone directory.

FREE BELT MANUAL includes information on conveyor and conveyor belt design, metallurgical data and belt maintenance. Write for your copy today.

The Cambridge Wire Cloth Co.

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Cambridge 10, Maryland

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

NEW WRINKLES

for adding sales appeal to

OLD PRODUCTS

(and new ones, too!)

It may cost LESS to give your product the glamour . . . distinctiveness . . . sales appeal . . . of this rich Sherwin-Williams textured finish, than to use conventional metal finishes!

Kem Art Metal (wrinkle) Finishes are economical because they cover with one coat . . . conceal minor surface imperfections and blemishes . . . often eliminate need of extra operations to remove weld marks, etc. They relieve the monotony of large, plain surfaces . . . add interest and eye appeal to any metal product.

Kem Art Metal Finishes—described in this new Sherwin-Williams Brochure AM-514—are part of the complete line of Sherwin-Williams quality finishes especially designed to meet production line requirements and stocked at your nearby local Sherwin-Williams Branch.

Consult your classified telephone directory—check this handy local source for your industrial product finish needs—ask or write for copy of this brochure. The Sherwin-Williams Co., General Industrial Division, Cleveland 1, Ohio.

Your "on-the-spot" source for
PRODUCT FINISHES

SHERWIN-WILLIAMS

INDUSTRIAL FINISHES

3-WAY HELP

on all finishing problems

1 Technical help on FINISHING METHODS

Do you spray, dip, flow-coat or all three? Sherwin-Williams' wide background of experience in all types of production finishing methods—including electrostatic, automatic and hot spray—may help you solve production problems, whether defense or civilian.

2 Specialized help on FINISHING MATERIALS

Sherwin-Williams Industrial Production Line Finishes include a complete line of primers, reducers and finish coats for air drying and baking, for wood and metal, especially designed to meet civilian production line requirements.

3 Industry-wide experience on FINISHING DEVELOPMENTS

Sherwin-Williams' broad experience in finishes and finishing systems for all types of products provides every industry the benefit of improvements in materials and techniques developed in other specialized fields.

Practical way to INCREASE SALES...

feature the ADDED SALES APPEAL of the best-known name in finishes!

A known name, identifying the finish on the product you make or sell, can often swing buying preference in favor of the known reliability of a familiar name.

No other trademark in the world says "This is a quality finish!" to so many people, so quickly, as the Sherwin-Williams name and trademark.

That's why market-minded manufacturers, more and more, are identifying the quality finishes on their own quality products with decals, seals or tags that bear this well-known symbol. Feature it . . . let it work for you in providing that added "sales plus" so often needed to overcome last-minute hesitance in buyers' minds.

• • •

Sherwin-Williams Custom Finish decals, seals and tags are available to manufacturers using Sherwin-Williams quality finishing materials. They offer important *added* reasons for looking into the advantages of these outstanding product finishes. Ask your Sherwin-Williams Industrial Representative for details, or write The Sherwin-Williams Co., General Industrial Division, Cleveland 1, Ohio.

SHERWIN-WILLIAMS

INDUSTRIAL FINISHES

Finishes

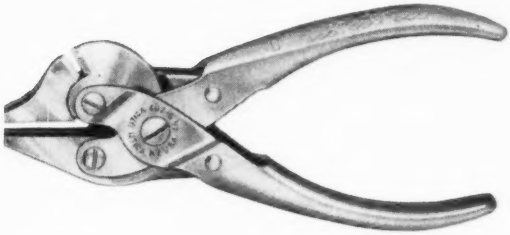
● This precision-light work lamp combines general illumination with a bull's eye center. The finish system of the lamp consists of a semi-gloss enamel for the supporting arms and a wrinkle finish for the base and reflector exterior, both in grayish green color, spray applied and baked. The interior of the reflector has a coat of clear, heat resisting, selicone lacquer.

(Photo courtesy Lindly & Company, Mineola, L. I., N. Y.)

● This Singing Tea Kettle is made of 20 gauge aluminum and finished in cherry red. The finishing process includes polishing, degreasing, anodizing, dying, sealing in bath of nickel acetate, and buffing.

(Photo courtesy West Bend Aluminum Co., West Bend, Wisc.)

that aid in appearance and utility

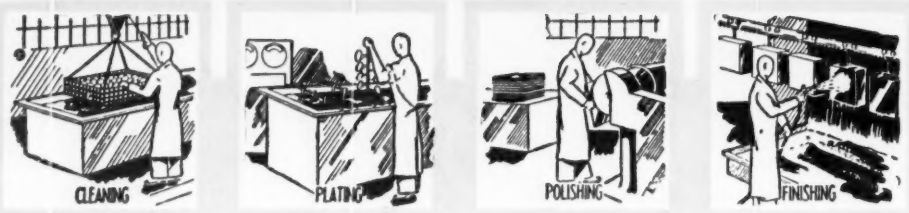


● **The compound-leverage, parallel-action pliers with cutters are stated to have a very high mechanical advantage. They are entirely finished by plating with nickel or zinc; the handles being tumble-finished prior to plating and the jaws being polished prior to plating.**

(Photo courtesy Utica Drop Forge & Tool Corporation, Utica 4, N. Y.)

● **Porcelain enameled steel pans, 3 inches thick, were used in the construction of the roof of the new Elizabeth River Tunnel. In all, approximatly 4,000 individual panels, finished with one ground coat and two top coats of ivory color porcelain enamel were used.**

(Photo courtesy Seaporcel Metals, Inc., Long Island City 1, N. Y.)

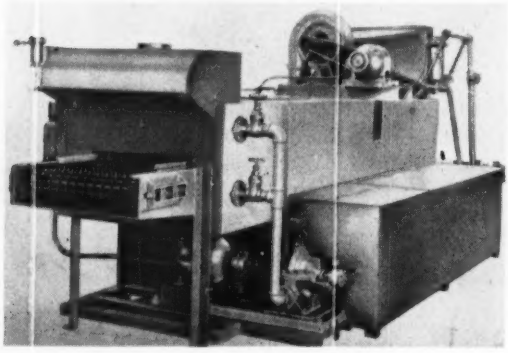


New • EQUIPMENT • MATERIALS • PROCESSES

Alvey-Ferguson Washing Machine

A washing machine has been designed and engineered by The Alvey-Ferguson Co., 626 Disney St., Cincinnati 9, Ohio, to remove grease and chips from rocker arm shafts after the machining operation.

This machine features a special type of A-F Bar Conveyor Unit, equipped with steel discs upon which the shafts ride, which is said to not only hold the shafts in place as the conveyor moves through the machine, but also provide minimum points of contact so the maximum surface of the shafts is exposed for efficient washing and drying. The machine utilizes the A-F Super Spray cleaning system and a screen tank having two screens so that one screen at a time can be removed for cleaning without interrupting operation of the machine. A hot blow-off unit is used for drying.



Alvey-Ferguson Washing Machine

Rossaul No. 57

A phosphoric based material, Rossaul No. 57, is available from the Rossaul Company, 170 Fifth Ave., New York 10, N. Y. The material will remove light oil films and when air dried will create a phosphate coating on the surface of aluminum. This film is claimed to act as a bond for the prime or color coat without penetration of the alumina oxide surface. It can be applied by dip or wipe-on methods.

Aldip Process

"Aldip," a dipping process for coating steel and other ferrous metals with aluminum, has been disclosed by General Motors Research Laboratories, Detroit 2, Michigan.

Developed over a six-year period, the process is stated to form a corrosion resistant coating for ferrous metals, which may in some applications replace zinc coated metals and when diffused by heat treatment becomes a heat resistant material. This may conserve a number of strategic alloys now used in high temperature applications, especially in defense production.

A pilot production housed in

SAVE ON WHEELS . . . STEP UP PRODUCTION

Speeds from 1,500 to 3,000 RPM are instantly available with the turn of the dial while the lathe is in operation. Polishing and buffing (cut-color-satin) can be done on one machine with no delays or lost motion.

The Hammond VRO Variable Speed Polishing Lathe definitely will step up production and improve finish. Maximum wheel economy is assured, too, because efficient peripheral speed can be maintained at all times — wheels can be used right down to the flanges before discarding.

Hammond

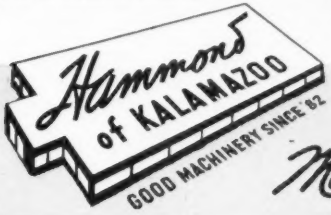
VRO

VARIABLE SPEED

POLISHING AND BUFFING LATHE

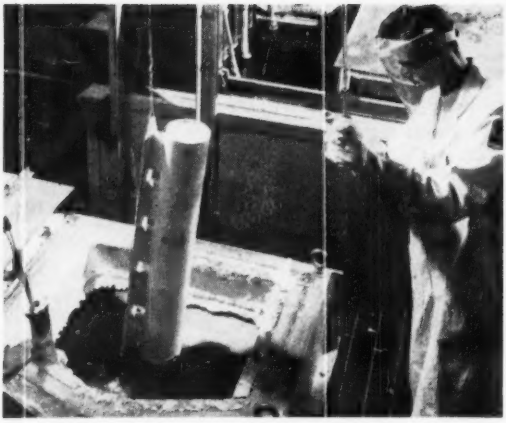
the DIAL does it

WRITE FOR CATALOG
Catalog showing all Hammond polishing lathes, abrasive belt, "OD" and automatic finishing machinery gladly sent on request. Write today!



Hammond Machinery Builders INC.

1622 DOUGLAS AVENUE • KALAMAZOO 54, MICHIGAN



The Aldip process, employed to coat steel and other ferrous metals with aluminum, is used here to coat a fabricated steel exhaust manifold for GM Detroit Diesel Engine Division. Aluminum coated inside and out, the manifold is being lifted from an aluminum bath.

the new Metallurgy Building at GM Technical Center where other applications of Aldip are being tested, is producing aluminum coated steel manifolds for diesel engines.

The Aldip can be a continuous process for coating sheet, wire or rod stock, or fabricated parts. At Harrison Radiator division the Aldip process is as follows: heat exchangers are dipped in an alkaline cleaner, washed in hot water, run through an acid pickle, rinsed in cold water and then dried in a furnace until ready for coating.

They are dipped approximately 4 minutes in a bath of preheating salt at temperatures ranging from 1280 to 1400 deg. F. Next, they are transferred to an aluminum bath which is covered by a layer of salt flux about ½ inch deep. They remain in the aluminum from 30 seconds to one minute.

Thereafter, while still red hot, the heat exchangers are returned to the preheat salt bath and slowly raised. Inside and out they assume a silvery appearance as the Aldip skin cools. Airblasting removes excess aluminum.

Variations of this routine or time cycle can be utilized, depending on the part or particular component being coated with aluminum.

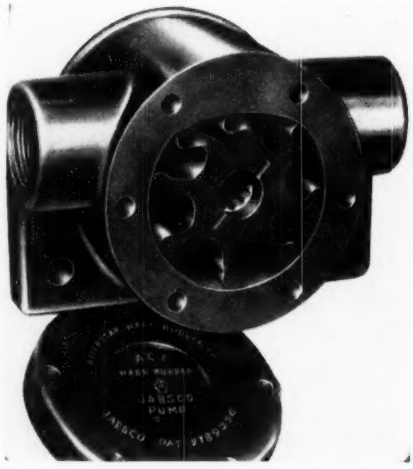
Aluminum Etchant

Known as Oakite Composition No. 60, a material designed to produce a heavy, uniform etch on aluminum has been announced by Oakite Products, Inc., 120 Rector St., New York 6, N. Y. The etchant is stated to etch rapidly and provide a controlled etch of any depth desired while imparting a smooth appearance to the surface. It is said to eliminate hard scale build-up on tanks and heating coils, leaving only a light, soft sludge which can be easily removed by a hose rinse. According to the manufacturer, working solutions can be used 2, 3, or 4 weeks and longer before dumping is necessary, and the solutions do not become clouded with suspended matter.

Hard Rubber High Capacity Pump

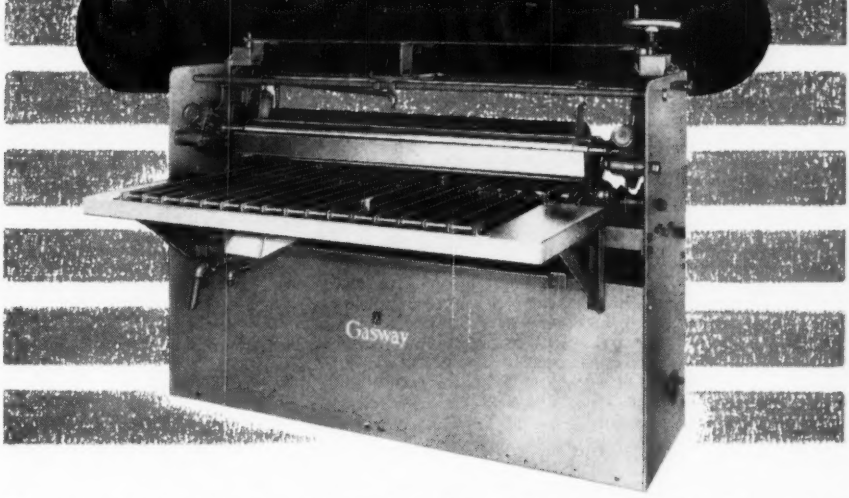
The Jabsco flexible neoprene impeller pump is now available in hard rubber construction for handling acids, alkalies, and other corrosives at moderate cost. The Ace hard rubber Jabsco pump, manufactured by the American Hard Rubber Company, 93 Worth Street, New York 13, N. Y., is ¾-inch in size and delivers 15

Hard Rubber High Capacity Pump



Rollacoat for economy

GET FINER—FASTER FINISHING!



The benefits to be gained by using the Rollacoat method of applying finishes and protective coatings, to practically any type of flat materials, are three-fold. In the first place coating speeds are greatly increased over those of any other method and are governed largely by how fast the coated materials can be handled or dried. Secondly, the coverage per sq. ft. per gallon is usually at least 50% greater, the only loss being the paint removed from the rolls at the end of a run. In the third place you obtain finer quality of finish due to accurate control of thickness and eveness of coat.

The applications of Rollacoating are numerous. Top, bottom and sides of practically any type of flat material, whether sheet or coil stock, can be coated by a single pass through the machine.

Special equipment for cleaning, treating, coating, drying, and rewinding strip in continuous process can be constructed to special order.

GASWAY CORPORATION

Write or wire today for the 12 page Gasway illustrated book describing Rollacoat Finishers, their possibilities and limitation.

6463 N. Ravenswood Ave.
Chicago 26, Illinois

g.p.m. at 22 ft. head, or 5 g.p.m. at 72 ft. head. The maximum capacities are 95 ft. head or 16 g.p.m.

The pump is self priming and will start instantly against suction lifts of 6 ft. without a foot valve. When primed, it will handle suction lifts as high as 14 ft.

The self-lubricated flexible neoprene impeller is said to outlast conventional metal rotors and gears, and is self compensating for wear. The impeller can be replaced quickly by simply removing the cover plate.

The pump can operate equally well in either direction and is driven by a motor of ½ hp., 1140 r.p.m., polyphase, close-coupled with the impeller mounted directly over the Hastelloy motor shaft.

Du-Lite SD

A compound which is claimed to completely remove occluded salts with one rinse after black oxidizing of metals has just been developed by the Du-Lite Chemical Corporation, Middletown, Connecticut.

Known as Du-Lite "SD," this liquid compound reacts chemically on black oxide salts which often remain trapped in rough or irregular surfaces of porous, laminated, sintered or spot welded parts. It was specifically developed to overcome creeping salts which previously have required numerous hot and cold rinses for their removal and made the black oxidizing of laminated metals impractical.

Oakite Composition No. 95

Oakite Products, Inc., 120 Rector Street, New York 6, New York, manufacturers of specialized cleaning and allied products, have announced the addition of Oakite Composition No. 95 to their line of electrocleaning materials. It is designed primarily as an electrolytic conditioner for zinc base die castings in preparation for plating.

In cleaning conditioning of zinc base die castings, the manufacturers claim Oakite Composition No. 95 is advantageous because fewer rejects result since this composition anodic conditioning process removes the surface films, disturbed metal, and last traces of soil and also avoids hydrogen gas formations. Composition No. 95 is stated to remove all films that might impair the brightness of sub-

IMMUNOL ADDED TO YOUR WATER STOPS RUST IN TUMBLING, PREVENTS PLATING STAINS. WITHOUT REMOVAL PROBLEMS

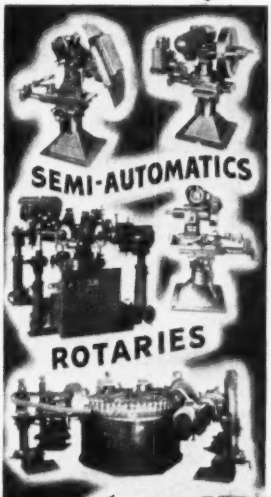
Added directly to the tumbling barrel or used as a dip as parts are removed from the screen, IMMUNOL prevents rust on tumbled parts and preserves bright finishes. Added to the final water rinse after plating, it prevents troublesome water stains from marring plated finishes and eliminates the need for buffing or polishing.

IMMUNOL works because it makes ordinary water rustproof, a potent neutral detergent and a powerful wetting agent. Parts treated in IMMUNOL solutions retain a dry, invisible, non-oily, non-tacky protective film so slight it can't be felt or seen. This film prevents rust yet does not require special handling or removal even though painting or lacquering or further processing is to be done. IMMUNOL is inexpensive to use, for it is used with water in very long dilutions. It is odorless, non-toxic and non-inflammable.

For complete details send for booklet.

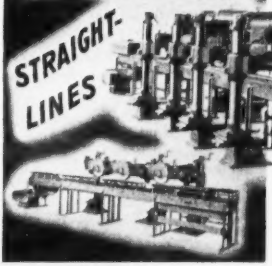
Haas **MILLER** Corp.
4th & BRISTOL STS. • PHILA. 40, PA.

ACME Automatic Polishing and Buffing Machines



- **Which ACME Automatic will give YOU lowest cost production?**

It depends . . . on the size, shape and material of the part you want to finish; on production required; on plant space and layout. ACME Automatics include Straightlines, Indexing and Continuous Rotaries, with or without spindles. These machines are built in a variety of types and sizes and may be equipped with varied special fixtures and accessory equipment to meet the conditions involved in your specific job. ACME Automatics have proved their efficiency in production for nearly half a century. Progressive ACME experience in this specialized field is a substantial assurance of lower production cost and dependability under production operation in your plant.



Visit our booth No. 1716—National Metal Show—Philadelphia—October 20-24.

Catalogs on Request

ROTARY STRAIGHT LINE SEMI-AUTOMATIC AND SPECIAL *Polishing and Buffing Machinery*

ACME Manufacturing Co.

1400 E. 9 MILE RD., DETROIT 20 (Ferndale) MICH.

Builders OF AUTOMATIC POLISHING AND BUFFING MACHINES FOR NEARLY HALF A CENTURY

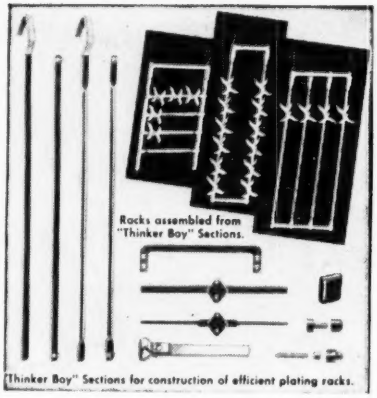
sequent electroplates thereby achieving brighter plating and prevent blackening during anodic cleaning.

Quick-Drying Enamel

Marketed under the trade name of "Totrust Enamel Instant Dry," an enamel which is said to be free-flowing, tough, highly resistant to chemical fumes, and dry in a matter of minutes has been announced by The Wilbur & Williams Co., 130 Lincoln St., Boston 35, Mass. According to the manufacturer, the enamel is applicable wherever the drying of paint film in a matter of minutes is important, such as on exterior equipment, road equipment, industrial machinery, and so on. The paint is available in 24 colors.

Standard Sections for Manufacture of Plating Racks

Efficient and durable racks for any plating job are easily and quickly made with "Thinker Boy" Sectional Members, announced by Belke Manufacturing Co., 947 N. Cicero Ave., Chicago 51, Illinois.



Standard Sections for Manufacture of Plating Racks

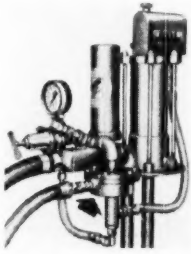
Most any style of rack can be made from the assorted lengths of the various sections, and various design and tip arrangements can be developed by laying the rack sections on a table and placing the articles in position. Frames can be disassembled and the sections re-used or stored in bins. Plastic plugs are available for sealing unused holes. "Thinker Boy" Sections are coated with universal plastic and equipped with Vac-Seal Fittings.

Park No. 290
BLACKENING SALT

Black Oxide finishing for rust resistance and decorative parts. Speedy black coating in water solution with no electric current. Permanent black finish on ordnance parts, tools, aircraft, bearing races. Dazzling black decorative finish for television cameras, business machines, hardware, metal screens and machine parts. Excellent bond for paints and enamels. Simple one bath operation. Write for bulletin H-16. Park Chemical Co., 8078 Military Ave., Detroit 4, Mich.

Pump Surge Control

A control known as the Binks Surge Control, which now makes possible the even application of coating materials, has been announced by Binks Manufacturing Company, 3118-40 Carroll Ave., Chicago 12, Ill.



Pump Surge Control

The control overcomes the problem of material shooting from a triggered spray gun in violent spurts or globs, due to the high pressure build-up in the pumps and hose when the operator shuts off the gun. Relief of pressure is achieved by automatically shutting off the pump's supply

WITH

LIQUID ENVELOPE

PEELABLE PROTECTIVE PLASTIC FILM

Keep your booths firesafe this labor-saving way:

1. **Scrape down and spray on "LIQUID ENVELOPE" with your regular spray-equipment.**
2. **When overspray accumulates, break "LIQUID ENVELOPE" skin and peel off in great, big pieces. Re-spray.**

That's all there is to it! You save labor . . . promote fire satety . . . get better illumination. Costs less than outmoded hand-scraping or grease-papering. Order 5 gallon Test-Sample at the Drum Lot price. Hundreds of smart operators have!

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Use PIONEER Stanzoils®
When employees hands are comfortable and properly protected by the *right* gloves for the job:

- there are fewer work stoppages
- injury claims decrease
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—all at lower per hour glove cost to your plant!

N-36 medium weight all neoprene glove, 11" length. Snug curved fingers, non-slip grip surface afford almost bare-hand dexterity.

Long-wearing liquid-tight neoprene Stanzoil industrial gloves resist damage from acids, oils, solvents, caustics. 32 styles, weights, sizes, colors. New PIONEER catalog shows you *at a glance* how to select the most efficient and economical gloves for each operation. It pays you to write for your copy today.

Industrial Products Division

The PIONEER Rubber Company
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STANZOIL PIONEER

Quality Gloves for over 30 Years

P.S. If your glove problems are unusual because of the nature of your product finishing operations, PIONEER welcomes the opportunity to help you solve them. Write us about your needs and problems — you'll save money, improve your glove service.

of compressed air the instant the spray gun is closed.

The elimination of high pressure build-up is said to extend the life of the pumping mechanism and the material hose; overcome the problem of large air pressure drop; and provide long and trouble-free performance.

Nu-Pon A Finish

A resin base finish, which can be applied with spray guns, was announced by A. D. Duncan, vice president and general manager of the paint and varnish division, Glidden Company, Berea Road at Madison Avenue, Cleveland 2, Ohio.

Called "Nu-Pon A," the finish is claimed to resist attacks of chemicals, corrosion and moisture, and is applicable for marine or farm use or wherever a strong durable resistant finish is needed. The manufacturer states that "Nu-Pon A" does the work of four or five coats of paint previously used for most exterior maintenance finishes.

A spray gun has been developed for the application of this finish, which employs the use of two fluid feeds, one for the finish, and one for the catalyst. It is stated that the two materials mix in the air and the paint begins to cure as it strikes the surface being finished. A quick setting feature allows the building up of a single coat to a thickness of more than 10 mils without running or sagging, according to the manufacturer.

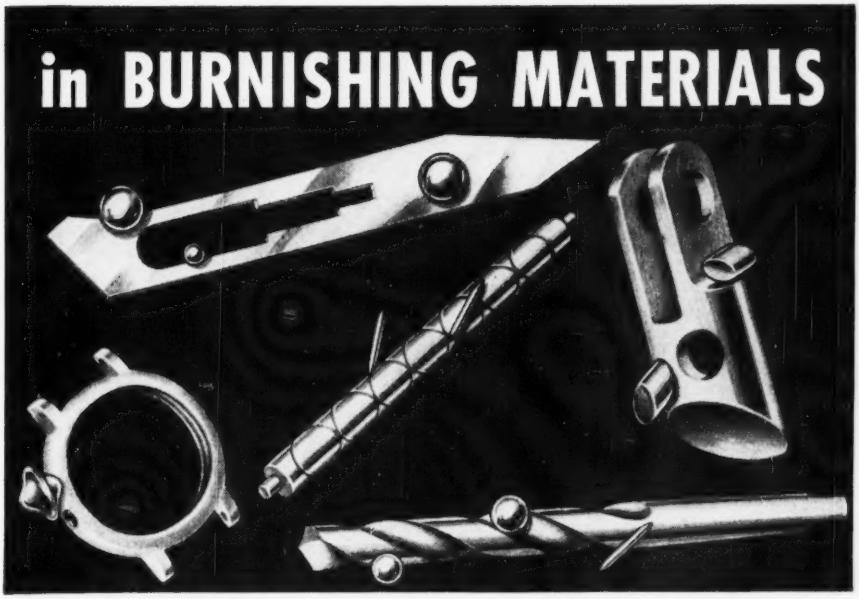
Nestier Dipping Basket

Chas. Wm. Doepke Mfg. Co., Inc., Rossmoyne, Ohio, has announced a steel mesh basket, known as the "NesTier" Basket, which is designed for efficient handling and space saving during operations where small parts are being moved and dipped in chemicals, paints, and other liquids. Stated to be rust-proof and corrosion-resistant, the basket can be nested when not in use and tiered when filled with parts.

Located at either end of the basket are ¼-inch diameter folding handles which form supports when the baskets are in a tiered position. When they are nested, the handles can be flipped out of the way. Grooves on the bottom self-center the basket for maximum stack rigidity.

Constructed of heavy gauge steel, the basket is available in two standard sizes,

in BURNISHING MATERIALS



it's the SHAPE that counts!

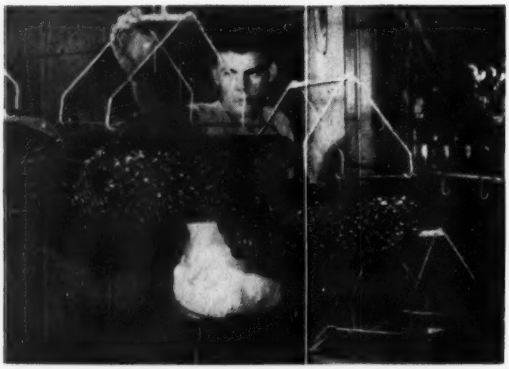
For fast, efficient barrel burnishing of small parts, stampings and castings, use Abbott Burnishing Materials. They're *shaped* to do the job right!

Abbott Burnishing shapes – Ball, Ovalball, Cone, Diagonal, Pin – are scientifically designed to make effective contact on parts of any size and shape. Each is made from high quality, Abbott bearing ball steel, deep hardened and polished to a mirrorlike glass hard finish. For the most satisfactory burnishing results . . . use ABBOTT.

Useful information on barrel finishing is given in the Abbott Catalog-Manual. Write for your copy.

THE ABBOTT BALL COMPANY
1064 New Britain Ave.
Hartford 10, Conn., U.S.A.

ABBOTT
the all round ball



"NesTier" Dipping Baskets.

one of which is 22⅝ inches long and weighs 14 lb., and the other 18 1/16 inches long and weighs 5 lb.

Turco 3232 Compound

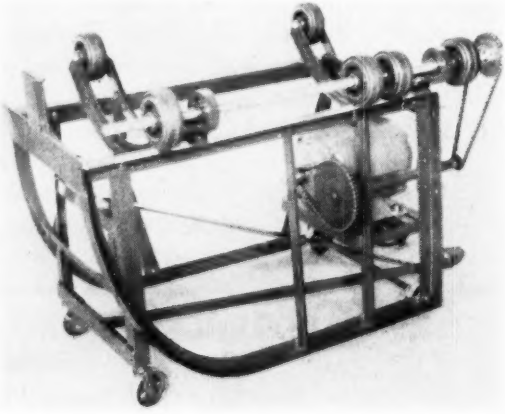
A free rinsing readily liquid steam cleaning compound has been announced by Turco Products, Inc., Department C-123, 832 East 62nd Street, Los Angeles 1, California.

Designated as Turco Compound 3232, it is stated to be safe on reactive metals and painted surfaces, is non-hazardous, and non-flammable, and affords speedy removal of light to medium soil deposits.

The compound meets the corrosion requirements of Air Force Specification 14128a and emits no disagreeable fumes or objectionable odors.

Portable Drum Rotator

Structural improvements in the Model No. 200 Portable Drum Rotator have been announced by the Morse Mfg. Co. of Syracuse, N. Y. Designed to agitate or mix drum contents up to 500 lbs. in 30 to 55 gal. drums, the No. 200 rotator has been strengthened by a second horizontal steel brace and the position of the drive motor has been reversed. The change in motor position and a new reinforcing vertical brace provide greater stability to the idler jackshaft.



Drum Rotator

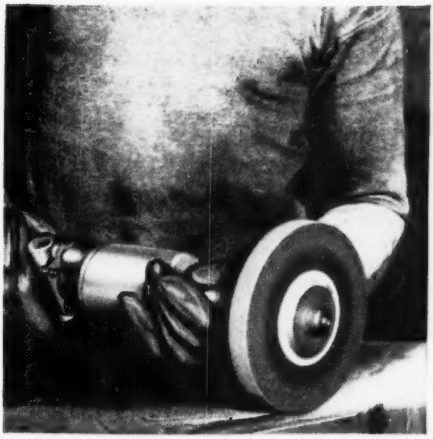
Metal Primer SP-3523H

An iron oxide zinc chromate primer for steel and iron has been perfected by the Thompson & Company, Oakmont, Pennsylvania. It is claimed that the primer can be recoated with lacquer or any other finish coat within three minutes after application without lifting or crazing.

This primer according to the manufacturer, is exceptionally durable without a finish coat and under outdoor exposure will protect ferrous metals for several months. It has a satin flat finish and can be applied by spray, brush, flow coat or dip methods.

Parco Black

A jet black finish for iron and steel, stated to have ten times the corrosion resistance of conventional black finishes, has been developed by Parker Rust Proof Company, 2172 E. Milwaukee, Detroit 11,



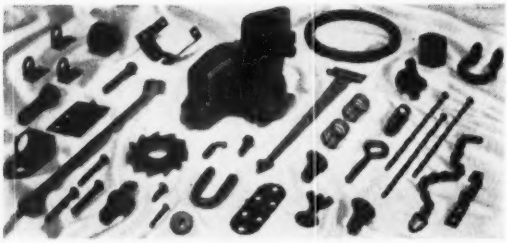
How to speed up
SNAGGING
. . . lower costs
. . . and still maintain maximum safety standards!

Difficult? Far from it. Standardize with Atlantic Grinding Wheels and you hold the key to *all three* of these important production advantages—speed, economy and on-the-job safety! **Here's why:**

Atlantic Grinding Wheels provide maximum wheel strength for continuous, high-speed operation. They're made with a special resinoid bond to assure extra wear. They're faster . . . cooler running . . . freer and cleaner cutting! Their smooth, floating action requires less pressure and makes work easy. They *seldom have to be dressed* . . . eliminate the need for frequent replacements . . . lower operating costs. Best of all, every Atlantic Wheel made — from the 2 inch size right on up — is test run at a 50% higher speed than that required for normal snagging operations. That means a greater margin of safety . . . on job after job . . . from start to finish.

CHECK THESE time and money-saving Atlantic advantages for yourself. Send for the new Atlantic Grinding Wheel Catalog today — get the full facts on Atlantic Speed-Tested Wheels for every job in the shop. Atlantic Abrasive Corp., 567 Pearl St., So. Braintree, Mass.

ATLANTIC ABRASIVE CORP.
South Braintree 85, Massachusetts



Parts treated with Parco Black.

Mich., and is now available under the trade name "Parco Black."

This product is used in water solution at low temperatures. Parts to be treated are immersed for 15 to 30 minutes in the processing bath, then are rinsed and dried. After oiling or waxing, the deep black, durable finish is ready for service.

Advantages claimed for Parco Black are several: the processing bath is non-caustic, extremely simple to build and easy to control. Operating temperatures are much lower than those required for other widely used black processes. Any part which can be immersed in the Parco Black can be treated.

Operating cost studies are stated to show excellent production economy with Parco Black.

Interior Coating for Vapor Degreasers

Circlad, an interior coating for vapor degreasers, has been announced by Topper Equipment Company, Matawan, New Jersey, manufacturers of the CIRCO Vapor Degreasers.

Circlad coating, applied to the walls of zinc coated degreasers has been found to double the normal life expectancy of such degreasers, it is claimed. It is a special coating applied over zinc-lined degreaser walls only. Normal protection from the zinc lining is achieved, and in addition, double protection is afforded by Circlad coating over the zinc.

The coating is supplied on new CIRCO zinc-coated Vapor Degreasers, at a very modest additional cost. Maker states this new coating is not a substitute for zinc or stainless clad degreaser walls. It is an over coating which increases the corrosion protection value of the degreasers.

Tufbak

Behr-Manning Corporation, Division of Norton Company, Troy, New York, announces the development of a waterproof sandpaper for industrial users. Designated Tufbak Speed-wet Durite Paper, it is claimed to have freeness of cut and ability to maintain the initial sharp bite necessary in wet sanding. An extremely tough backing permits maximum flexibility and increased body strength resists creasing, cracking and curling.

The combination of toughness and flexibility is stated to increase durability, mileage, "hand," and resistance to skidding and peeling of grit. These advantages are obtained whether the sheet is soaked in the usual liquids for a few minutes or for hours.

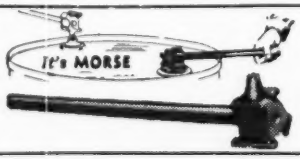
Sethco Filter Pumps

Announcement is made by Sethco, 70-78 Willoughby St. Dept. PF, Brooklyn 1, N. Y. of the most recent addition to its line of filtering equipment, the Model ASI-400 and ASI-600. These units are designed and constructed to produce sparkling filtration of practically any acid or alkaline solution. It is claimed that they are extremely simple and economical to operate.

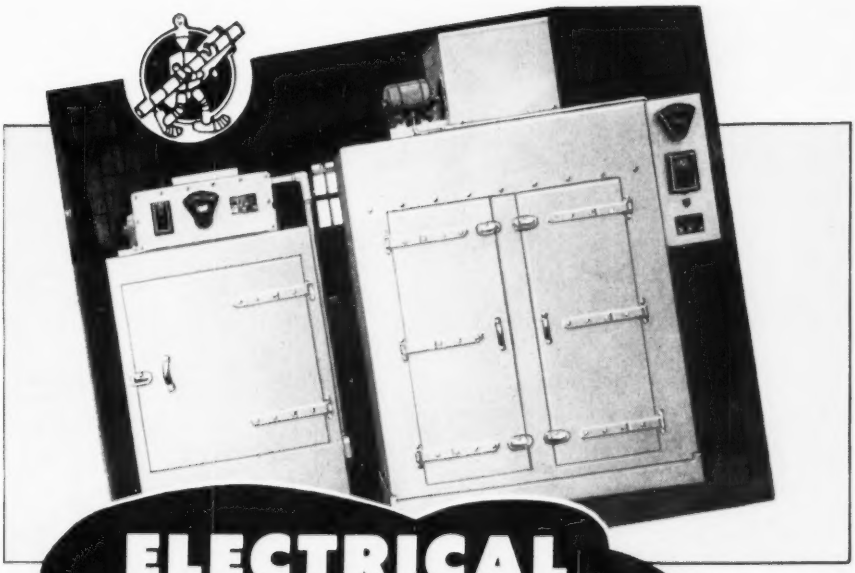
Model ASI-400 is rated at 400-500 g.p.h. and Model ASI-600 is rated at 600-850 g.p.h. Both models are equipped with volute centrifugal pumps and enclosed heavy duty industrial motors.

The pumps and all their fittings are made of 316 stainless steel. The filter as-

Send NOW for this FIT-ALL
DRUM PLUG WRENCH
Instantly loosens, tightens 95% all plugs or bungs in steel drums. Has 16" extra-strong steel tubing handle. Wgt. only 2 lbs. Order 1 or more today!



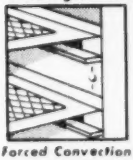
THOUSANDS IN USE saving time, labor, accidents!
SATISFACTION GUARANTEED... **$3.00**
Non-sparking type $4.60
Plus Parcel Post
MORSE MFG. CO., Inc.
125 Dickerson, Syracuse 2, N. Y.



ELECTRICAL OVENS

LARGE OR SMALL SIZES

Latest Type Indicating Controls



Forced Convection Heated

Present-day Industrial or Laboratory oven requirements present individual problems that are of utmost importance and each oven should be designed for its particular purpose. Young & Bertke can quickly advise you as to that type of oven. Its cost, efficiency, utility and productivity.

Rack, conveyor, drawer, portable or tunnel drying ovens with temperature controls, circulating air fans or other special equipment.

For Bonding, Drying and Baking, Dehydrating, Heat Treating and Pre-Heating.

32 years of specialization serving the Industrial field of operation.

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The YOUNG & BERTKE Co.

OVENS • SPRAY BOOTHS • DUST and FUME CONTROL

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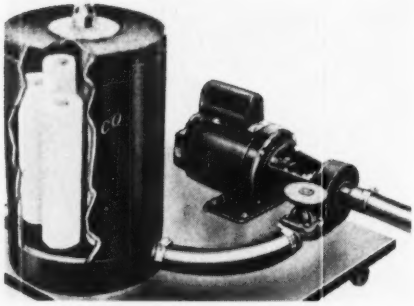
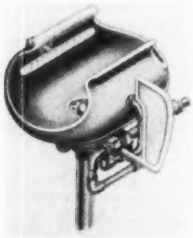


Sethco Filter Pump

sembly is made of a recently developed synthetic resin, Sethrin, which is claimed to have chemical inertness and excellent temperature resistance.

High Efficiency Fountain

The Logan Emergency Showers, Inc., Box 111, Glendale, California, is now manufacturing an eye-wash fountain that will instantly wet all parts of the face after acid burns, dust, fumes, heat or other contamination has either touched the eyes, ears, nose, or mouth. The manufacturer claims that the fountain meets all known industrial hygiene recontamination regulations and plumbing and sanitary standards.



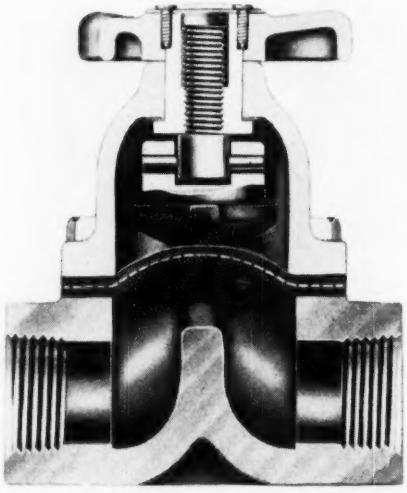
High Efficiency Fountain

The porcelain-enameled bowl with all piping and fittings of red brass and chromium plated is actuated by a non-leak, bat-wing valve. It is available in pedestal type, or for wall mounting.

Parian Plastics Diaphragm Valves

Combining the unique corrosion resistance of Ace Parian with the efficient Saunders diaphram principle, these general-purpose diaphragm valves are said to be ideal for handling a wide variety of corrosive chemicals. Tough, odorless, and non-toxic, the vales are manufactured by The American Hard Rubber Company, 93 Worth St., New York 13, N. Y., specialists in corrosion-resistant equipment.

Metal never comes in contact with the



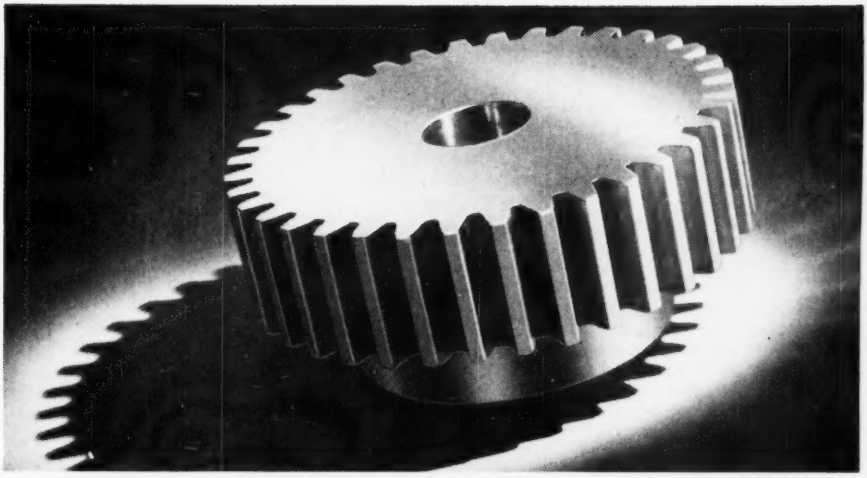
Parian Plastics Diaphragm Valves

liquids handled. The valve body is molded of Ace Parian, a plastic compound in the polyethylene family. The diaphragm may be rubber, neophrene, or polyethylene as required. The bonnet assembly is sealed off from the solution, and the valve has no stuffing box. It can be serviced without removing from the line, and all parts are interchangeable.

The valves are available in all standard sizes. Its working pressure is 50 p.s.i. at 77 deg. F.

Corrosion Preventative Material

Kelite Products, Inc., 1250 N. Main St., Los Angeles 12, Calif., has announced the development of a homogenous solution, known as Kelite M-2, which is said to protect mild steel from corrosion after cleaning. According to the manufacturer, the liquid has the ability to displace and ab-



High lustre finish... faster with SUPER-HONITE CHIPS!

YES! New Super Honite gives a better finish—*faster*—than any other barrel finishing abrasive. That's because it's the world's *toughest* abrasive chip—engineered for grinding and burnishing to a high luster finish. Does it in jig time, too, because chips don't crumble or pulverize to slow the job.

So remember, for a better finish—in record time—specify Super Honite. No other chip cuts faster—no other chip cuts as long!

TOUGHEST NATURAL CHIP! Use Regular Honite for close tolerance work or minimum removal of metal. No other barrel finishing abrasive—not even granite—retains its edge as long as Regular Honite.

WRITE TODAY for your free copy of "3M Barrel Finishing" . . . it's filled with helpful information for increased efficiency, lower costs. Address Minnesota Mining & Mfg. Co., Dept. PF102, St. Paul 6, Minnesota.

Name.....

Company.....

Address.....

City.....Zone...State.....

Honite® BRAND

Made in U.S.A. by Minnesota Mining & Mfg. Co., St. Paul 6, Minn.—also makers of "Scotch" Brand Pressure-sensitive Tapes, "Scotch" Sound Recording Tape, "Underseal" Rubberized Coating, "Scotchlite" Reflective Sheeting, "Safety-Walk" Non-slip Surfacing, "3M" Abrasives, "3M" Adhesives. General Export: 122 E. 42nd St., New York 17, N. Y. In Canada: London, Ont., Can.

3M COMPANY

sorb up to 11 per cent of its own volume in water without impairment of efficiency, thus eliminating the need for drying prior to treatment.

Kelite M-2 may be applied by immersion, spray, or brush and is said to be non-inflammable, non-phenolic, and non-toxic. Moreover, the material, it is claimed, is impervious to finger-printing and will not burn the skin, and its vapors are not harmful when breathed.

Porta-Brasive Blaster

Announcement is made by the Pruden Tool Company, Inc., 310 West 68th St., New York 23, N. Y., of a portable sand blaster, which is stated to be advantageous to any finisher using sand blasting methods for preparing metal prior to finishing.

According to the manufacturer, the Porta-Brasive Blaster has been successfully proven in autobody and finishing shops all over the United States and Canada.

It is said to be especially applicable for preliminary cleaning prior to plating and tinning, etching for better bonding and in removing old finishes, or flux from welds.

Porta-Brasive Blaster

Powerful, direct-connected (no gears), 3450 r.p.m., 100-120 v AC air-cooled motor. All sealed ball-bearing construction. Die-cast aluminum housing, polished. All-position handles. In hand weight only 5 lbs. Insulated with ground wire for wet as well as dry sanding or rubbing. Available accessories—deep contour pads, surface plates, felts, etc. Takes any sheet abrasives—3 covers 4½" x 6½" from standard 9" x 11" sheet.

A time saving quality tool priced so every worker can have one.

Write for Circular

SpeedWay MANUFACTURING CO.
1895 So. 52nd Ave., Cicero 50, Ill.

Pressurematic 300

The Spee-Flo Company, 3603 Harrisburg Boulevard, Houston, Texas has announced the Pressurematic 300 for hot-spray painting. Weighing approximately five pounds, it may be slung over the shoulder in a light-weight Portacase for mobile application and used for hot spraying buses, trucks, railroad cars, large household articles and so forth. It can also be rigidly mounted on an industrial spray-booth bench or wall for conveyor-belt spray applications.

The Pressurematic has no moving parts, and the heated material is propelled through the heat exchanger by normal fluid pressure on the spraying line.

The standard pressure pot or pump system is filled with material and pressurized in the normal manner. Full heat is reached in three minutes and is maintained automatically for constant volume flow or intermittent application. It is stated that a man may conveniently

For Your Metal Surface Treatments
consider PARKER'S *background*

▼

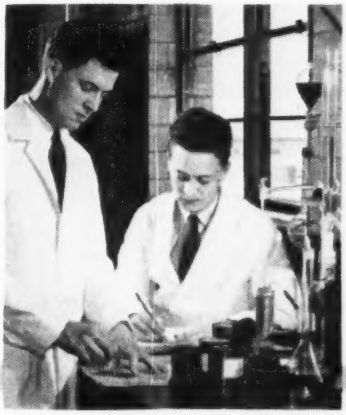
over 37 years' experience · *over 1500* customers

many MILLIONS of parts treated · PERFORMANCE PROVED

Research — a continuing, aggressive and expanding program, since our 1915 pioneering days — has maintained Parker leadership in the surface treatment of metals. Today, Parker products are more versatile, more efficient and more widely used around the world than ever before.

For you this means getting the benefit of Parker's rich background of practical experience, and of research facilities unequalled in this field. Address:

PARKER RUST PROOF COMPANY
2172 East Milwaukee, Detroit 11, Michigan



PROTECTED BY Bonderite QUALITY CORROSION RESISTANT

***BONDERITE**—corrosion resistant paint base . . . widely used on brand name refrigerators, ranges, autos, etc.

***Bonderite and Bonderlube**—aids in cold forming of metals . . . 90% of all seamless steel tubing is drawn with Bonderite . . . many ordnance items being manufactured with this aid.

***Parco Compound**—rust resistant . . . used on iron and steel articles, small and large, simple and complex.

***Parcolacs**—group of specialized products made up of various finishes for use after Parco Compound . . . includes wax base finishes, stains and rust preventive oils.

***Parco Lubrite**—wear resistant for friction surfaces . . . used to create a nonmetallic phosphate "break-in" coating on gears, cylinder walls, pistons, rings, shafts, valves and rods.

***Parco Prime**—corrosion resistant paint base for use on structural steel and custom fabricated articles too large to process by conventional methods . . . single coat, spray or brush applied, creates uniform prime coat on iron and steel.

***Parco Black**—corrosion resistant coating which provides a jet black finish on iron and steel parts in a single bath. Used on nails, nuts and bolts, tools, hardware.

Technical bulletins mailed upon request.

PARKER

*Registered U.S. Pat. Off.

Pressurematic 300

spray up to 10 gallons per hour at an average spray temperature of 165 deg. F. It may be cleaned without removal from the line, with the normal flushback of the material hose.

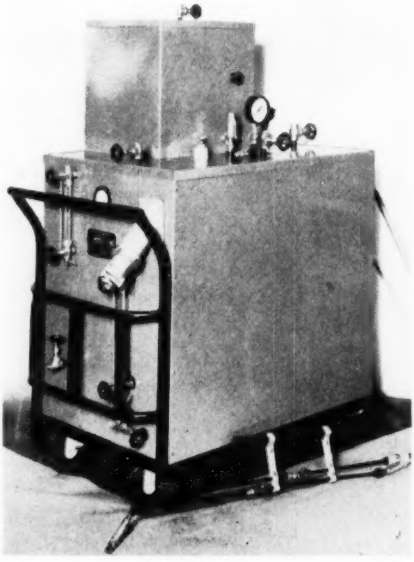
Interim Rust Prevention with Barrel Deburring

The Magnus Chemical Company, Garwood, N. J., has announced a novel use of its temporary rust preventing material, Magnus 26N, which is stated to have a broad field of application. The mildly alkaline material is usually used to provide temporary protection against rusting of steel parts by dipping the work into a hot solution of 26N, at a concentration of ¼ to 1 oz./gal. of water.

This material was recently tried in deburring barrels and results of tests were stated to be satisfactory. In production, washers coming from the machining operation are charged into the barrels together with a 26N solution containing 8 ounces per 10 gallons of water. In about 10 minutes the charge of washers are thoroughly deburred. The washers are then dried and packed, ready for shipment.

Steam-Jet Cleaner

To meet industrial demands for faster and more effective cleaning of processing equipment and so forth, Livingstone Engineering Company, 100 Grove St., Worcester 5, Mass., has announced important improvements in the Speedylectric Steam-Jet Cleaner Model JC-30. Similar in general design and construction to the original award winning JC-30, this latest unit operates at increased effectiveness due to pressure up to 200 p.s.i., and speed with steam jets of higher velocity. Hot dry steam alone or with solvents, soap or detergents atomized under finger-tip control of the operator blasts the object to be cleaned at jet speeds up to 1200-feet per second. The cleaner can be used indoors, since it is all-electric, and therefore eliminates any fire or explosion hazards, The built-in Speedylectric Boiler is A.S.M.E. Code and Underwriters' Laboratories listed. The elimination of motors, pumps and moving parts insure years of service with minimum maintenance and repairs, it is claimed.



Steam-Jet Cleaner

Hundreds of jobs can be done faster,

better with Strand

FLEXIBLE SHAFTS

Flexible Shaft Machines

Here's equipment that turns out the work...it's *dependable*

Strand flexible shaft equipment is known for its rugged dependable construction and top consistent performance on the job. It is the kind of equipment you can depend upon. You have a choice of different speeds and power units as well as floor, bench or overhead models to meet your every requirement.
If your distributor does not handle the Strand line, write direct for catalog and full details.

Available in overhead, bench, floor models.

The Balmar Corporation
N. A. STRAND DIVISION

EASTERN SALES
Woodberry, Baltimore 11,
Maryland

WESTERN SALES
5001 North Wolcott Ave.,
Chicago 40, Illinois

Pearl Essence Finish

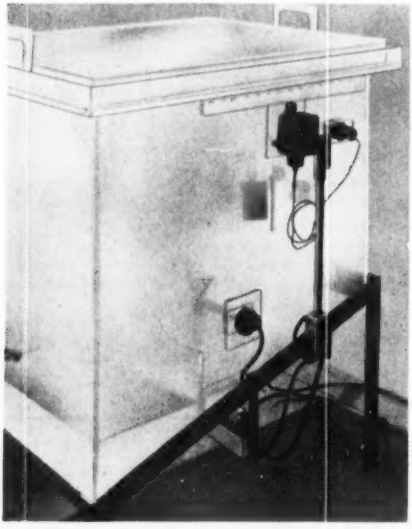
The Mearl Corporation, 153 Waverly Place, New York 14, N. Y. producers of Mearlmaid pearl essence, have announced a finish for automobiles, and other products such as refrigerators, kitchen cabinets, lamps, and toys.

The finish is claimed to add a bright, permanent lustre that enhances the appearance of any product. It is applied by the following procedure: parts are covered with a solid ground coat and then rubbed with water sandpaper. Two double coats of pearl lacquer and color with a ratio of 10 parts lacquer to one part color are then applied by spraying. This is followed by one double coat, consisting of 1 per cent per essence in clear lacquer and color at the same intensity as the previous coat. After allowing two to three days for thorough drying the finish is polished with rubbing compound and buffed with a liquid polish.

Salt Spray Testing Cabinet

Now being introduced after five years of development by Singleton Co., 10516 Western Ave., Cleveland, Ohio, pioneer in welded H-T Lucite electrochemical equipment, is the Singleton H-T Lucite Salt Spray Testing Cabinet for fog-type spray testing of all ferrous and non-ferrous metals, organic and inorganic coating materials.

Primarily designed for salt spray testing, the cabinet is said to be inert to all solutions and gases used in the complete range of fog-type testing, and will last indefinitely in continuous service. It is stated to offer greater versatility and longer life. Many times lighter in weight for portability, and transparent for observing operations, the standard salt spray testing cabinet is shipped complete and ready for use. Its atomizer operates on any plant air system, and a 110-volt electric line is sufficient for its heater.



Singleton H-T Lucite Salt Spray Testing Cabinet in operation.

PRODUCT LITERATURE

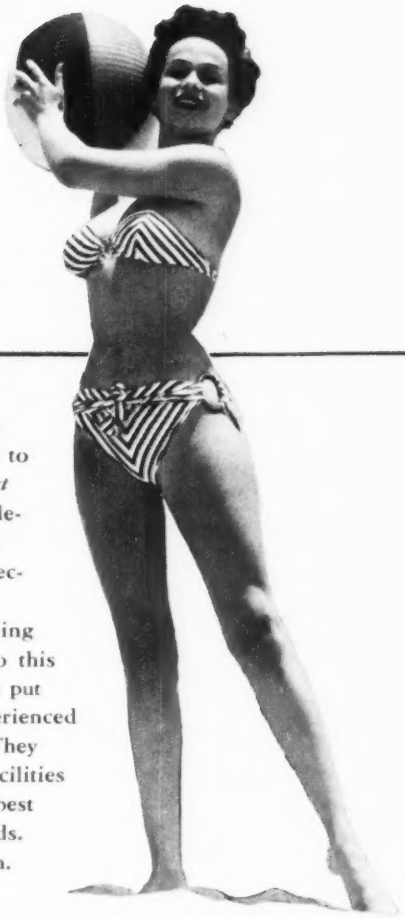
For further information on any product mentioned in this issue—use the READER SERVICE CARDS between the covers.

Planning and Making Industrial Waste Surveys. Published by the Ohio River Valley Sanitation Commission, 414 Walnut St., Cincinnati 4, Ohio. Price, $1.00.

This "how-to-do-it" manual, prepared by the Metal-Finishing Industry Action Committee of the Commission, tells how to conduct a liquid waste study in a manufacturing plant. It describes methods of measuring flow volume, obtaining representative samples, and calculating waste loads.

Richardson-Allen Selenium Rectifiers. Richardson-Allen Corporation, College Point, N. Y., a manufacturing affiliate of Wesley Block and Company, has issued several catalogue sheets describing Selenium Rectifiers for electroplating and anodizing as well as its selenium automatic chargers, rectifiers for power conversion, and equipment which operates on the heat exchange principle. The colored illustrated sheets contain detailed information and specifications for the various rectifiers and other equipment.

motivating



An important factor which motivates prospective buyers to choose a product is the *correct finish* . . . a finish which complements design . . . accentuates detail . . . yet serves as a protective coating.

If the finish you are now applying to your product does not do this two-fold job, we suggest you put your problem up to our experienced technicians for a solution. They have the know-how and facilities to produce the type of finish best suited to your particular needs. Write for further information.

Research, Quality, Service

Affiliate
GORDON BARTELS CO.
Roller Coating Specialists

ROCKFORD VARNISH
Company
ROCKFORD, ILLINOIS
Manufacturers of Protective and Decorative Coatings

Cost Analysis Check Chart. E. Reed Burns Mfg. Corp., 40 Withers St., Brooklyn 11, N. Y., manufacturer of polishing and buffing compounds, is distributing a check chart on which cost comparisons can be made. Data required for the analysis includes cost of compounds used, cost of buffs used, cost of time taken, and number of units finished. From this information the net cost of operation can be computed.

Type AC-1 Columbia Volt-Ammeter. A descriptive folder is available from the Columbia Electric Manufacturing Co., 4535 Hamilton Ave., Cleveland 14, Ohio, on the volt-ammeter, a recently announced instrument of the clamp-type. Hand sized for use on alternating current, it measures up to 600 amperes and 600 volts. The folder depicts and explains this meter and lists specifications.

Metal Processing. Tesco Chemicals, P.O. Box 173, Station C, Atlanta 5, Ga., has announced the availability of a manual covering metal preparation for paint and other protective coatings. Included are such topics as phosphatizing, cleaning, paint stripping and pickling.

The manual defines and explains the conversion coating process, the selection of a phosphate process, its uses and general information. Detailed technical data on both make-up and operating conditions, together with instructions is given. A chapter, with drawings, is devoted to equipment and following pages deal with tests and controls, and simple cleaning.

Agilide. A four-page colored folder which describes an unplasticized polyvinyl chloride is available from American Agile Corporation, P. O. Box 168, Bedford, Ohio. The catalogue explains what this construction material is, how it may be used and its advantages and the forms in which it is available. Physical and chemical properties of the product also are listed.

Cleaning and Phosphate Coating Compound. A leaflet describing Detrex 79, a compound used for cleaning and imparting a fine grained phosphate coating to steel parts to provide a good paint bond, has been issued by Detrex Corporation, Detroit 32, Michigan.

Spray-Bake Conveyor Machine. The Capital Machine Company, 36 Balmforth Ave., Danbury, Connecticut, has available a four-page illustrated folder on its automatic spray painting and baking conveyor. Various features of the unit and advantages are listed and discussed.

Camaco Electric Air Hot Spray System. A four-page illustrated folder is available from The Capitol Machine Company, 36 Balmforth Avenue, Danbury, Connecticut, which describes the Electric Air Hot Spray System, a spray painting method utilizing hot air. Advantages of this method, as well as models available are described and listed.

Acid Proof Materials and Construction. Three descriptive and technical bulletins on the subject of acid proof materials

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and construction are offered by Aqua-Therm, Inc., 39-67 N. Torrence Street, Dayton 1, Ohio. **Bulletin No. 139** discusses Eonite pipe and fittings, made of furan resin material reinforced with laminations of chemical glass fabric cloth, for handling most mineral acids, alkalis, and organic solvents. **Bulletin No. 160** descusses the acid-proof construction of pickling and plating tanks; process tanks, vessels, and towers; pickling and plating basins; acid-proof floors. **Bulletin No. 190** discusses Eonite lacquer, a coating to protect interior or exterior surfaces from the corrosive effects of gases, vapors, mists, and liquids.

Booklet A-33. A twelve page colored and well illustrated booklet, highlighting metal cleaning, may be obtained from Turco Products, Inc., 832 East 62nd Street, Los Angeles 1, California.

The booklet outlines most of the chemical processing operations that are necessary in the metal working industry and describes tested and proved Turco manufactured compounds that suit each operation. A group of engineering charts has been included as well as a two-page "Phosphatizing Reference Chart" which describes and tells how to use phosphate materials that meet JAN-C-490 specifications.

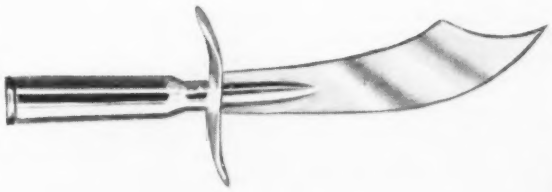
Engineering Electroforming. A reprint of six pages with seven illustrations and chart, which describes the unique process which places a new tool at the design engineers disposal and which makes possible the simplification of many construction problems is available from the International Nickel Company, Inc., Dept. EZ, New York 5, N. Y.

The three commonly electroformed metals, copper, iron and nickel are compared as to expensiveness, where and when to use, and typical applications are suggested. Factors affecting production and designing of matrices are presented.

Chromalox Electric Radiant Panels. A six-page folder which includes illustrations and technical information about Chromalox Far-Infrared Electric Radiant Panels is available from Edwin L. Weigand Co., 7500 Thomas Blvd., Pittsburgh 8, Pa. Applications of far-infrared heat for baking, drying, preheating, curing, and degreasing are discussed. Electrical and mechanical features of the "ready-to-erect" heating panels are listed, and specifications are given.

Cambridge Woven Wire Conveyor Belts. The Cambridge Wire Cloth Co., Cambridge 9, Md., has prepared a 4-page colored bulletin, No. 107, illustrating the different designs of conveyor belts and describing their uses and advantgaes. Also listed are methods describing how the conveyor belts help combine movement with processing, and illustrations of these various instances are included.

The letter opener in the accompanying illustration was "home made" from .30 caliber carbine ammunition and a 75 mm. Japanese shell. Following the removal and slitting of the bullet, all powder was removed from the cartridge and detonator. The cutting blade and guard were made from the rim of the 75 mm. shell. All joints were soldered after assembly.



The opener was finished by electrocleaning, dipping in muriatic acid, followed by a copper strike, bright nickel plate, and chromium plate.

(PRODUCTS FINISHING Staff Photo)

For more complete information on products and processes use READER SERVICE CARDS inside covers.

"Porcelain Enamel to Handle the 'Tough Jobs'," is the title of a 16-page booklet published recently by the Erie Enameling Co., Erie, Pa. The booklet contains sections on the types of porcelain enamel, and descriptions of various attainable physical characteristics including abrasion resistance and resistance to high temperatures and thermal shock. Lists of typical industrial applications involving each of these characteristics also are included. Of particular interest to designers are sections dealing with color in industrial porcelain enamel and basic rules which should be followed in designing for porcelain enamel.

Rust-Chek Clear Synthetic Enamels. Rinshed-Mason Co., 5935 Milford Ave., Detroit 10, Mich., has prepared a technical bulletin describing its Rust-Chek Clear Synthetic Enamels and their application to the chrome plate system. Detailed specifications and graphs are included in the four-page bulletin and a cleaning cycle for copper-chrome plate is outlined.

Enthone Solder Stripper—Enthone Inc., Dept. PF, 442 Elm Street, New Haven, Connecticut, has available a date-sheet on an alkaline stripper for tin, lead and tin-lead alloys. Detailed information is given on types of equipment needed, concentration to be used, makeup of the stripping solution, operation and control procedures and cautions to be followed.

Gardner Gage Stand and Hardness Attachment. Bulletin No. 110 of the Henry A. Gardner Laboratory, Inc., Bethesda 14, Md., describes the Gardner thickness gage. Well illustrated and in color, the 4-page bulletin gives special attention to the recently developed gage stand and the hardness attachment. The equipment is described in detail, methods of use are explained, and examples of results achieved with the hardness attachment are tabulated.

H-VW-M Plating Conveyor. Bulletin SA-101, issued by the Hanson-Van Winkle-Munning Co., Church St., Matawan, N. J., describes its semi-automatic, heavy duty plating conveyor. The profusely illustrated, colored booklet shows in detail the variable speed drives, the heavy duty carriers, and typical ventilation methods for these units. Motion plating with horizontal oscillating agitation and multiple agitation is shown. General specifications and a schematic drawing are included.

Metalweld Rubber Linings. An illustrated four-page folder which describes the applications of rubber lined steel is available from Metalweld Inc., 26th and Hunting Park Ave., Philadelphia 29, Pa. Information is included on the bonding processes and on the various linings that are applied to steel for storage and transportation of corrosive chemicals. Maximum concentration and temperatures for inorganic acids, salts, and alkalies are tabulated.

"The Right Way to Apply Buffing and Polishing Compounds," is the title of an eight-page booklet which describes the "Siefen System," available from J. J. Siefen Co., 5645 Lauderdale Ave., Detroit 9, Mich. This manual **No. 500,** illustrates equipment for hand and automatic polishing. Other literature available from Siefen describes Nuglu Liquid Cold Glue for setting up polishing wheels; Brushing Nuglu for recoating wheels; Nu-Spra-Glu, the spray form; and various pump and time valve parts. All material is well illustrated for the reader.

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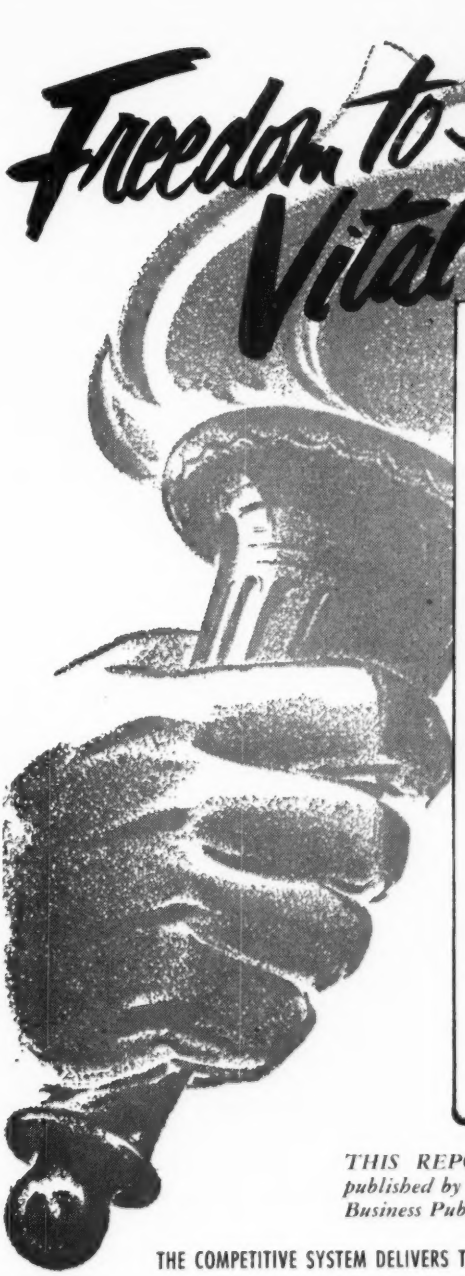

Eight decades ago 70% of all gainful workers in the U. S. A. toiled in agriculture. Today farms and factories, put together, account for less than 40%.

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Circular Case, Electric Control Thermometers. Catalog 6482, available from Station 40, Minneapolis-Honeywell Regulator Co., Wayne and Windrim Aves., Philadelphia 44, Pa., describes recording and indicating circular case, electric control, industrial thermometers used for temperature control on drying ovens and plating tanks. Information on available switching action, chart and scale ranges, dimensions, and bulb and tubing variations is included in this attractively illustrated 10-page booklet.

Lasalco Equipment. Electroplating and polishing materials and equipment are illustrated and described in a bulletin issued by Lasalco, Inc., 2818-38 LaSalle St., St. Louis 4, Mo. Included in the four-page, two-color catalog are illustrations of a burnishing barrel, utility barrel plater and Richards barrel plater, circular chrome plater, and several conveyor platers. A complete list of Lasalco products for plating appears on the last page.

Roto-Finish Process. Editorial articles on the Roto-Finish process have been collected by the Roto-Finish Co., 3700 Milham Rd., P.O. Box 988, Kalmazoo, Mich. Individual articles or the complete portfolio are available.

Included are three case histories on deburring automatic transmission parts; an installation in which 110 different ferrous and non-ferrous parts of all sizes were brightened by seven Roto-Finish machines; the elimination of hand filing, brushing, grinding and deburring of automatic washing machine parts; deburring and ball burnishing carburetors, brake and aircraft parts; and two other articles which give details on the operation and application of the process.

Nickel Plating With Insoluble Anodes. A twelve page booklet describing advantages and limitations of using a chloride-free electrolyte at high current density for industrial electrodeposition and electroforming of complicated shapes may be obtained from the International Nickel Company, Inc., Dept. EZ, New York 5, New York.

The booklet contains 12 tables and illustrations indicating economic power consumption; optium pH, current densities and rate of electrolyte circulation. It also explains how to design a regenerating unit and gives the mechanical properties that can be expected.

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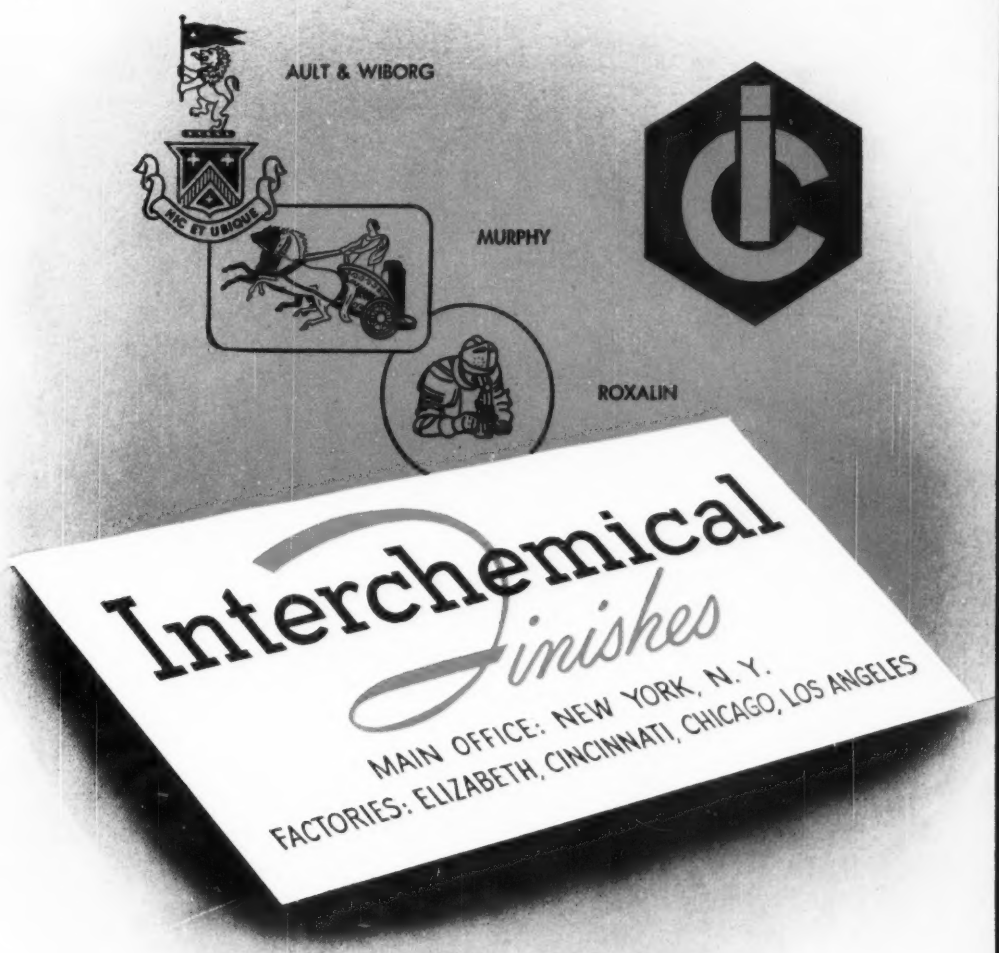

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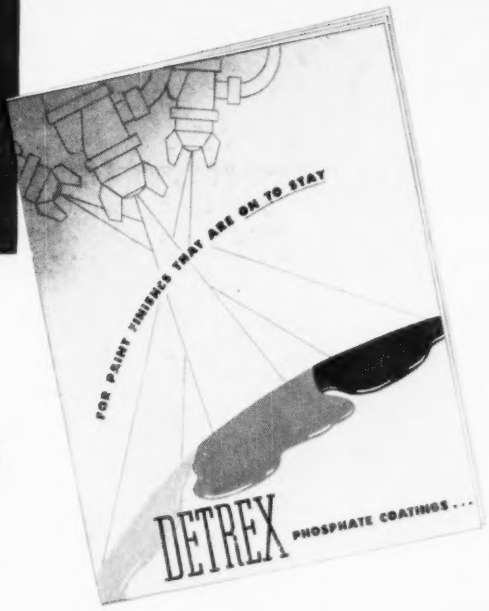

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